

Flight Simulator^{WORLD}

August/September 2000
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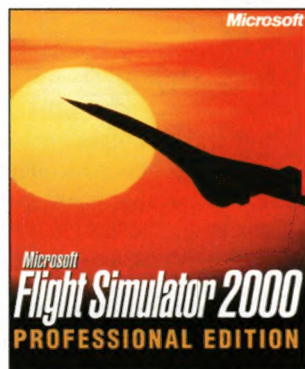


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From The Editor

Tim Dickens, Managing Editor



How Real Is It Getting?

I am starting to see a new trend in flight simulation that I find very encouraging. This new trend is a decidedly pronounced emphasis on realism in virtual flight, particularly in the third party add-on market for aircraft and scenery. Although making these add-ons "realistic" has always been a priority among authors, what I am seeing now is a true renaissance. An enthusiasm I have not seen in a few years.

The new emphasis on quality is partly driven by market forces; the flight sim software consumer has become much more savvy and demanding. This, combined with the new technology and visual rendering capabilities of the latest crop of simulation programs, is driving the third party world to pay much closer attention to detail. The experience and skill of the artists who create the aircraft, scenery and utilities has increased over the years, and the new capabilities of the simulators allows them to add much more of their potential to the final product.

Moreover, of course, we as consumers now expect even more from anything we consider adding to our hard drives. For example, what we thought were good add-on aircraft just a couple of years ago won't look very good when compared to what are available now. Most of those "old" FS 98 planes and panels no longer pass muster.

Much of this is due to the expanded use of quality photography that many developers are employing. Creating aircraft textures and panels from good (and I mean good... not something you just find floating around the Internet) is becoming more common. Since the rendering engine of the simulators is making faithful reproduction of these images possible, people are putting their valuable time and energy into taking good quality photographs, from the correct perspective and with good lighting, and using them as the basis for their textures. What this does for aircraft panels is simply extraordinary. A "photoreal" cockpit panel no longer means some grainy image, taken from some arbitrary perspective, with tiny instruments pasted on top. We're starting to see *the real thing*, with attention to small details and custom made gauges made with the same emphasis on authenticity.

As this trend continues, I am quite sure we will be seeing even more of these "new age" add-ons. It's understood that there has always been a lot of competition among third party freeware and commercial developers. Once someone produces an extraordinary product, the bar is raised and everyone else puts even more effort into his or her work to make it meet the new standard. Nobody wants to be outdone.

How will this effect the average developer/hobbyist, who is what we would perhaps call a "casual developer"? Will the big names in the flight sim community just push them into obscurity? I don't believe this is going to happen. It will make their job more challenging, to be sure. But I believe that this challenge is what such individuals seek, for the most part.

From The Editor continues on page 35

Pilot's Note: This information is not intended for use in actual flying situations. While the information is as realistic as possible, you should not use it for actual flying instruction. *Safe flying!*

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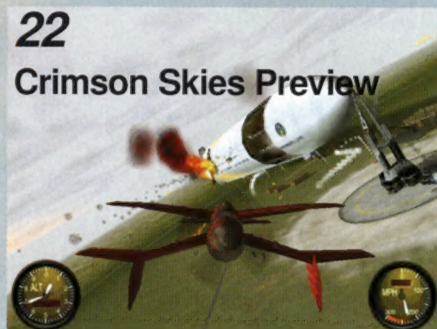
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Flying With SATCO



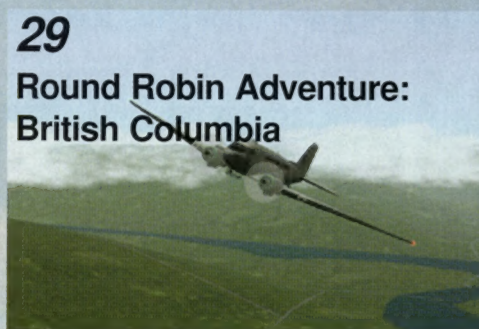
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Flying With SATCO

This is our third in a continuing series of articles on Flying With SATCO (Simulated Air Traffic Controllers Organization). SATCO is the umbrella organization for thousands of flight simulator users who fly online with simulated ATC.

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Crimson Skies Preview

In 1937, the United States is centered on aviation where militias protect giant Zeppelins that carry cargo and passengers across the sky. Air Pirates run rampant as the struggles of the different nations create havoc and chaos across the skies. It's all in Crimson Skies, based on the board game created in 1998 by FASA Corporation and available from Microsoft.

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Round Robin Adventure: British Columbia

This Round Robin takes place in the Interior of British Columbia, Canada. A very rugged and mountainous area. In fact, it is one of the toughest areas of the World for any kind of planes to fly regular routes.

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Virtual Flight School: Understanding Approach Plates The ILS Approach

Are instrument approach charts necessary? It depends on how far you want to extend your flight experience. As in the real world, some pilots are just fine and happy tooling around in the air on a nice puffy-cloud day, when the air just seems like glass.

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NOTAMS: New Products

Lockheed L-1011 TriStar *Flight Simulator add-on*

Pilot's has developed two independent versions of the L-1011 aircraft for Microsoft's Flight Simulator. The package contains an L-1011 version for both FS 98 and FS 2000.



The FS 2000 version, according to Pilot's, is not just a spin-off of the FS 98 version, but was developed on its own. It features all known FS 2000 enhancements (including GPS, night lighting effects in both the panel and the aircraft, internal views and more) and all new gauges.

The CD-ROM also includes a complete database of the L-1011. By selecting an aircraft's serial or production number, you can view the complete history of that particular aircraft. The history includes version, maiden flight, sales, registrations, refurbishing and final fate. You can also select from over 250 pictures and videos of the real L-1011 with complete technical information.

The package includes:

- Fifteen airline liveries of the L-1011 (types 100, 200, 250 and 500)
- Moving parts (gear, spoilers, flaps, ailerons, rudder, elevators, fan blades)
- 3-D engine intakes
- Transparent cockpit windows with visible panels
- Special night lighting effects in FS 2000
- Realistic flight model with accurate fuel consumption



L-1011

Pilot's
Wipplingerstr 24-26
A-1010 Wien Austria
www.fs2000.net

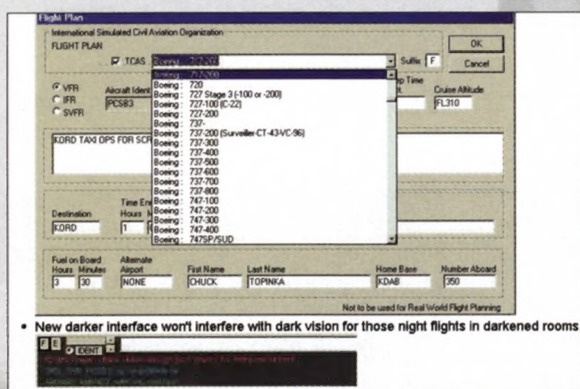
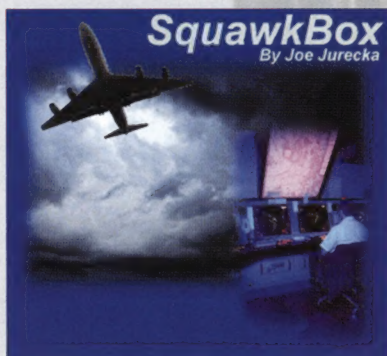
For those of you who aren't familiar with the term, NOTAMS is an acronym for NOTices to AirMen. The U.S. Government issues NOTAMS regularly. This issue of Full Throttle includes our version of NOTAMS — an expanded new products section. It's a regular part of our magazine. The products listed are compiled from press releases and information provided by the respective authors and companies who supply the products. We've taken steps to verify the information with each author or company, but cannot be responsible for inaccurate features, specification or availability dates.

SquawkBox 2.2.2

Real Time Air Traffic Control

SquawkBox author Joe Jurecka has announced the release of public beta 2.2.2 for the popular air traffic control program.

SquawkBox adds real-time air traffic control to FS 95, FS 98 or FS 2000 through a worldwide network of servers that connect you to users of Pro-Controller (the radar screens).



Its features include:

- ➔ Real people providing air traffic control with Pro-Controller.
- ➔ Automatic real-world hourly weather updates (every 5 minutes) based on your position as you fly.
- ➔ Flight management computer with LNAV, VNAV and speed control letting you define routes and have the aircraft fly the route automatically.
- ➔ TCAS
- ➔ ACARS
- ➔ Voice ATC using Roger Wilco technology from Resounding Software.
- ➔ Common shapes library from Brett Collings and Sean Galbraith lets you see other aircraft as they were intended to be seen.
- ➔ Support Fly! and Airline Simulator 2, plus native support for Microsoft FS 2000.
- ➔ Fast client-to-client position updates for smoother visuals of other aircraft.
- ➔ New flight plan interface.

SquawkBox 2.2.2

Author: Joe Jurecka

www.avsim.com/mike/sb_pc/sbhome.htm

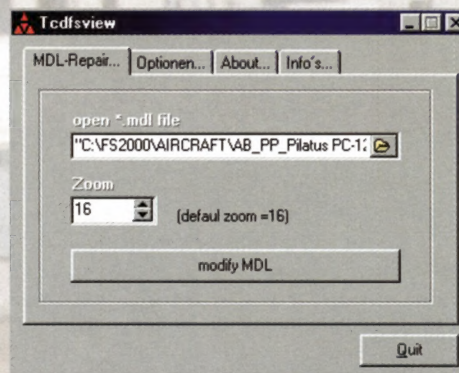
Freeware

Tcdfsview

Aircraft View Utility

Many third party aircraft are rendered from an unreasonable distance when in the Selection menu or spot view of FS 2000. Tcdfsview is a tool for Microsoft FS 2000 that corrects these views.

Although the problem is easily fixed if you're familiar with a hex editor, Tcdfsview provides a simple and friendly interface to adjust this known bug without having to understand hex editing.



Tcdfsview

Tcdsoft

www.tcdsoft.de

Freeware

NOTAMS: New Products

ATC2000

Air Traffic Control Simulation

PC Aviator, in conjunction with Aerosoft, announced the upcoming release of *ATC-2000*. *ATC-2000* puts you inside one of more than 51 U.S. TRACON centers. You can be in front of a highly realistic radarscope as the departure or approach controller. You're the controller and it's your job to sequence the aircraft safely for arrivals and departures in your busy airspace.



Its features include:

- You can control aircraft at 51 TRACONS in the United States (an additional 130 are available through expansion disks).
- Actual equipment in use at a particular TRACON is simulated by ATC-2000 in the form of an ARTS-IIIa terminal to the latest state of the art, STARS or Standard Terminal Automation Replacement System.
- Realistic looking “amber” scopes with fully functional dials and equipment — all the information seen on a real controller’s scope.
- Air traffic in the simulation is based on actual real world traffic so only aircraft that would fly into a particular airport in the real world would be seen in that airspace in ATC-2000.
- Real pilot artificial intelligence has pilots behaving as real world pilots. They won’t always hear you and might not do what you tell them to do.
- Voice and speech synthesis with support for voice recognition.
- Connectivity with flight simulators such as Microsoft Flight Simulator for real-time pilot-controller interaction.

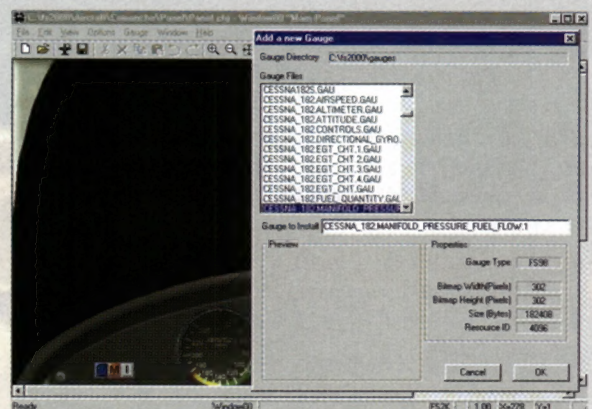
ATC2000

PC Aviator Inc.
3950 Highway 17 Bypass,
Murrells Inlet, SC 29576
www.pcaviator.com/

CfgEdit

FS panel editing utility

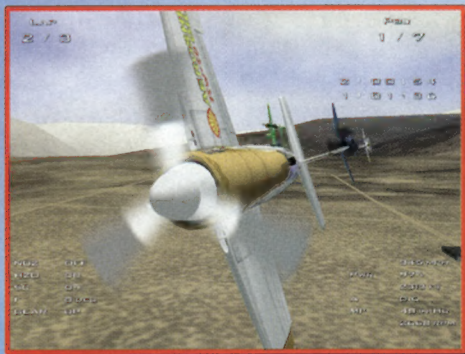
CfgEdit is a freeware add-on for Microsoft’s Combat Flight Simulator, FS 98 and FS 2000. You can use it to modify or create panel.cfg files for CFS, FS 98 and FS 2000 aircraft. *CfgEdit* now supports most features of both FS 2000 and Combat Flight Simulator — including dual resolution bitmaps, as well as CFS and FS2K’s “cluster” gauges.



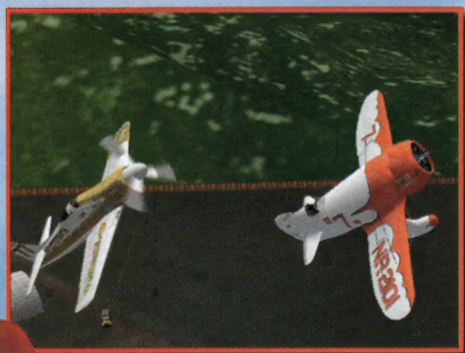
CfgEdit

Author: Ed Struzynski
Internet: <http://www.cfgedit.com/>
E-mail: edstruzynski@psn.net
Freeware

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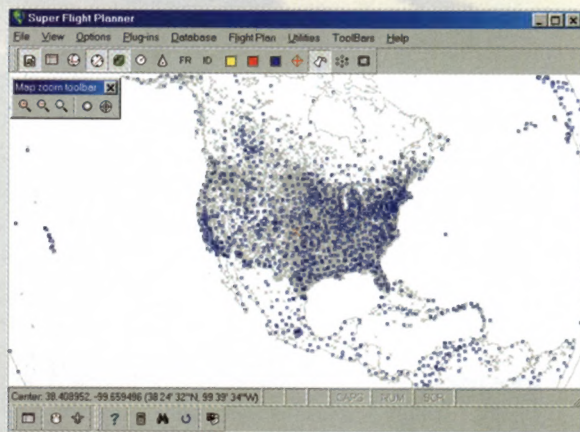


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NOTAMS: New Products

Super Flight Planner 2.5

Alessandro Antonini has announced public beta release of his *Super Flight Sim Planner 2.5*. It's a freeware flight planner that lets you plan your flight reading direct FS 2000 scenery data (BGL files). It can also read and import data from other third party scenery programs. *Super Flight Sim Planner 2.5* can create a flight plan with or without adventure generation. *Super Flight Sim Planner 2.5* is based on an open architecture so source code is available to programmers for add-on modules and plug-ins.



Its features include:

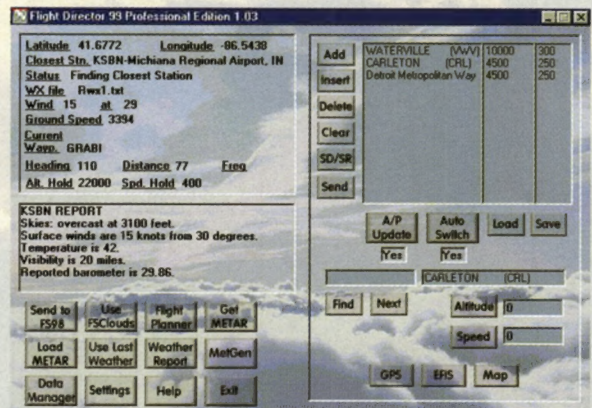
- ➔ Fully compatible with Windows 95/98, Windows NT and Windows 2000.
- ➔ Compatible with FS 2000 scenery base with new, faster scan engine.
- ➔ New, easier to use database browser.
- ➔ New database system is 2000% faster than previous version for browsing and sorting.
- ➔ Adventure compatibility with FS 2000 and APLC 1.30.
- ➔ Bugs present in earlier versions have been fixed.

Super Flight Planner

Alessandro Antonini
www.futurtechno.com/centralpark/
Freeware

Flight Director 99 Upgrade

Flight One Software has released an update that adds new features and more FS 2000 support for *Flight Director 99* (an integrated flight planner, EFIS, GPS, Weather and ATC companion for Microsoft's Flight Simulator). This update is for any previous edition of Flight Director 99.



Flight Director 99 Upgrade

Flight One Software
www.flight1.com/
Free upgrade

Terrain SDK

The *Terrain SDK* provides several tools and documentation if you're interested in adding terrain to FS 2000. The *Terrain SDK* describes how to turn DEM (Digital Elevation Mesh) data into scenery files that you can use in FS 2000. Although this SDK doesn't require any programming skill, it does involve working with the extremely technical information related to DEM data.



FS 2000 Terrain SDK

Microsoft FS 2000 Development Team
Download:
[www.microsoft.com/games/FS 2000/sdk/FS_2000_terrain_sdk.EXE](http://www.microsoft.com/games/FS_2000/sdk/FS_2000_terrain_sdk.EXE)

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NOTAMS: New Products

Aviation Weather and Weather Services

Based on the latest releases of Fly! and the ability to import FS 2000 real world METAR weather data, flight simmers are as concerned about their virtual flight weather as some pilots are in the real world. You're probably also as confused about aviation weather.



Aviation Weather and Weather Services

Gleim Publications, Inc., has been the leader in providing easy-to-use and easy-to-understand training materials to pilots for a long time. Their *Aviation Weather and Weather Services* book is no exception.

The main purpose of *Aviation Weather and Weather Services* is to provide you with an up-to-date compilation of all the FAA's weather publications in one easy-to-read and understand reference book. It's one of the fastest and easiest ways to understand aviation weather.

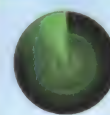
Aviation Weather and Weather Services

Gleim Publications, Inc.
P.O. Box 12848 University Station
Gainesville, Florida 32604
www.gleim.com/Aviation/awws.html
Price: \$22.95

Radar Contact Version 2

JDT LLC proudly announces Version 2

Radar Contact is a standalone adventure generator engine that produces FS 2000 and FS 98 adventures. It requires support from an option of several third party flight planner utilities and generates realistic ATC interaction flight adventures.



Radar Contact Version 2

The new features include:

- Accurate, real time weather in Radar Contact adventures (when Radar Contact Version 2 is paired with FS Meteo 4.76).
- Flight Planners Support for Nav, FSNavigator, FlightSim Planner/FlightSim Commander, Super Flight Planner and FS 2000.
- A new Pilot's Menu that eliminates the need to remember keystroke combinations.
- Approach vectors for a more realistic entry point to downwind and shorter downwind legs based on type of aircraft.
- Departure procedures so if you file a departure procedure, realistic handling by tower and departure.

Radar Contact Version 2

JDT LLC, P.O. Box 565,
Ellendale, TN 38029-0565
www.flightsimmers.net/radarcontact/
Download version: \$28.00 U.S.
CD Version: \$38.00 U.S.

Weight and Balance Computer

The *Weight and Balance Computer* lets you control the specific weight of your favorite FS 2000 aircraft. See and feel the difference between an unloaded and a fully loaded takeoff at maximum gross weight.

Weight and Balance Computer

Michael Lyons, LyonsMark Software
<http://communities.msn.com/WeightandBalanceComputerWeb/site/homepage>
E-mail: m_j_lyons@hotmail.com
Freeware

Data Access Center

Avsim Online has announced their *Data Access Center* site for Flight Simmers. *Data Access Center* is a set of direct links to current real aviation services that will keep you informed on your virtual flights as you would in real flight. Many FS 2000 and Fly! users employ the METAR real weather features. *Data Access Center* will keep you informed of what to expect in route as well as at your destination.

Data Access Center includes the following links:

- METAR weather data and decoder tutorial
- Surface condition data
- Wind aloft
- Jetstreams
- Radar imagery
- Satellite imagery



Note this is, of course, for flight simulation use only.

Data Access Center

Avsim Online
www.avsim.com/avwx/avsim_data.html
Free service

Project Magenta

Demo versions

- Popular Flight Sim developer Enrico Schiratti and his team have not only changed their name from PFD to Project Magenta, but they have also released several demo versions of their specialty expanded cockpit flight navigation modules for FS 2000. If you're a heavy iron flyer who demands a more realistic flight experience, Project Magenta can supply your needs.



Project Magenta

www.schiratti.com/magenta/index.html
e-mail: mailto:support@schiratti.com

Tell us about your new flight sim products....

Are you trying to sell a flight sim product? We'd like to help you spread the word about your new product.

The "NOTAMS: New Products" section appears in each issue of *Flight Simulator World*. Our readers want to know anything and everything related to flight simulation — both software and hardware.

Please send details to editor@flightsimulatorworld.com



Flying With SATCO

Ready To Communicate With SquawkBox

This is our third in a continuing series of articles on Flying With SATCO, the Simulated Air Traffic Control Organization. SATCO is the umbrella organization for thousands of flight simulator users who fly online with simulated ATC.

I introduced SATCO in the April/May *Flight Simulator World* and described the details of operating *SquawkBox* with SATCO for online flying in the June/July issue. We built a short flight plan from KCGX (Meigs) to KMKE (Milwaukee) and programmed the plan into the *SquawkBox* Flight FMC. Then we used *SquawkBox*'s flight plan saving and loading feature to discover that we could load our flight plan into the *SquawkBox* flight plan filing form automatically. Next, we connected to the worldwide network of SATCO servers, then placed *SquawkBox* into the "Squawk Standby" mode. We'll quickly review some of these steps, then make a "real" online flight with SATCO ATC. At the end of the article, I'll provide some help on using the Roger Wilco voice program with *SquawkBox*.

Since we want to demonstrate as much as we can, with the greatest realism, we'll ultimately want to fly in an area with ATC coverage for at least our departure and destination airports. In the April/May SATCO article, I pointed out several ways to see where we might fly to get SATCO ATC coverage. To review, one way to do this is point your Internet browser to www.satco.org. There, you will

find a link to "server list and who is online." This will show several tables that provide lists of active servers, controllers, and pilots. Paging down, you can look at the "Current List of ATC" table, to see what controllers are operating. These are listed by airport ICAO code for airport functions, like Approach and Tower, and by regional names for Centers/FIRs.

Flying Where The Controllers Are

A graphical way to locate controller coverage is provided by Enrico Schiratti's award-winning free *WhazzUp* program, which I like to use. You can download it from the Internet site listed at the end of the article. *WhazzUp* shows a zoomable world map, with active controllers shown in color. It also includes a list box of active controllers. We'll go into more detail about *WhazzUp* in a future issue, but meanwhile, I recommend you try this remarkable and award-winning free program. It is quite intuitive, and it is easy to operate its basic features. Remember also that controllers operating with Roger Wilco voice capability have a "_V_" in the middle of their callsign.



OK, now we start FS 2000 and establish an Internet connection. Next, we browse the SATCO web site, as mentioned above, to look at the current list of operating controllers. Suppose we see that Chicago Center, Chicago Approach and O'Hare (KORD) Tower are all operating. If so, we can fly from somewhere to O'Hare. Suppose we also see that Cleveland Center is operating. Then we can plan to fly from Detroit Metropolitan (KDTW) to KORD. We can use the excellent freeware Nav 3.0 program to build a plan, as it includes flight planning with SIDs and STARs.

by Doug Horton

In this case, we'll also use the Pullman (PMM) STAR, which is usually flown for arrivals into KORD from the northeast and east. I'm going to explain how to do this in a future issue, because we want to focus on using *SquawkBox* for this issue, but here's the plan I made:

KDTW - JXN - AZO - PMM - CLAUD - TADDS - PIVOT - STORY - PAPPI - ORD.

JXN is the Jackson VOR, and AZO is the Kalamazoo VOR. The intersections from PMM to ORD constitute the Pullman STAR. Note that the real Pullman STAR ends with the ORD VOR, not KORD itself. This is customary because if the radio or ATC fails, you would fly to the ORD VOR and execute an approach at your planned arrival time. Of course, the great majority of time everything works, and you are vectored for approach before you head for the ORD VOR. After building the plan, we export it from Nav 3.0 to both *SquawkBox* and FS 2000 formats, then print it. We'll learn more about Nav 3.0 in a future issue.

your flight plan

Now, back to FS 2000 to put it into Multiplayer Hosting mode, as explained in the last issue. Next, use the GoTo feature in FS 2000 to move an aircraft, such as the Lear 45, to Detroit Metropolitan. Since FS 2000 places us on a runway, use the slew feature to move to a ramp near the terminal or if you have the real airport diagram, to the General Aviation area on the east side of the field.

Make sure that you have an Internet connection established at this point. You should see the welcome screen illustrated in Figure 1.

As we continue preparation, we start *SquawkBox*. As I write this, I'm using the public beta version of *SquawkBox* version 2.2, which is available at the Internet link listed at the end of the article. You need to link *SquawkBox* to your multiplayer session by following the sequence of dialog boxes, as explained in last month's issue.

Next, right click on the *SquawkBox* chat box and select **Flight Plan Functions** from the menu, so we can load our flight plan into the *SquawkBox* FMC. As explained before, this will also enter the plan into the *SquawkBox* flight plan form. We enter the remaining information, including the planned cruise altitude, such as FL 220 for this short trip, time enroute, etc. We might also enter a comment "Have

STARs" to let the Chicago Center and Approach controllers know that we have the real Pullman STAR chart to properly fly this arrival.

We then use *SquawkBox*'s menu to "Connect" to the Internet and FS 2000 Multiplayer. Again, these steps were explained in detail in the last issue. After seeing the *Connect* acknowledgments, we place *SquawkBox* into the Squawk Standby mode to finish checklists and start engines. By the way, version 2.2 of *SquawkBox* also works with Fly!, AS2, FS 95 and FS 98, but we'll continue with FS 2000 as our example.

The next step is to get the ATIS for KDTW. What's the frequency? We can use the FS 2000 Map and double-click on KDTW. We see that the frequency for ATIS is 133.675 and we get the weather. (Note that FS 2000 does not provide a phonetic identifier, so let's use "Mike" with ATC. Note also that even though FS 2000 will put most of the ATIS weather into the program, *SquawkBox* will drive real-world weather conditions into FS 2000 via FSUIPC.DLL.)

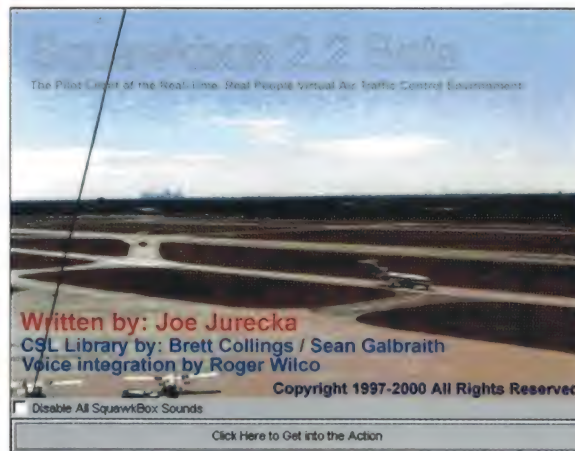


Figure 1 Splash screen for *SquawkBox* version 2.2 public beta release.)

Flying With SATCO

After getting the ATIS, we're ready to go, so we use the main *SquawkBox* menu to *uncheck Squawk Standby*. With the menu still open, we click ATC functions and look at the list. The Cleveland Center controller is still active, and if the SATCO controllers operate normally, the Center controller will assume functions of "missing" controllers, such as Detroit Clearance Delivery/Ground, Tower, and Departure. Alternatively, depending on SATCO controller workload and preference, the controller may just tell you to "take off at pilot's discretion" and call Center when airborne. If, in this situation, you take off from an airport without SATCO coverage, you're missing part of the reality. You will need to check in with the next active controller. You can find them with the *SquawkBox* ATC **Functions** command. This lists the active controllers in your area. Note in Figure 2 that Chicago and Cleveland Centers are operating with voice, as indicated by the callsigns "CHI_V_CTR" and "CLE_V_CTR."

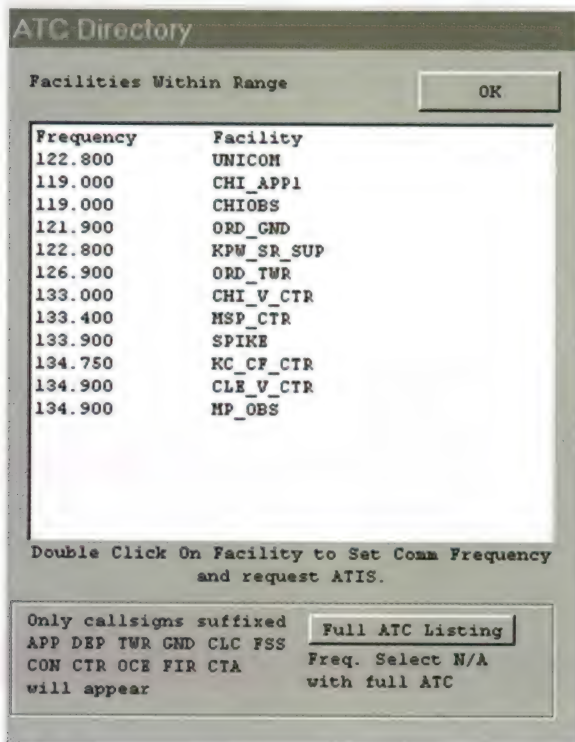


Figure 2. *SquawkBox* ATC directory dialog box, showing Chicago and Cleveland Centers operating with voice.

Communicating

We next use the *SquawkBox* menu system under ATC functions to find Cleveland Center in the list. Then, we double-click the listing, which tunes our COM1 radio to the correct frequency. (In version 2.2, this action should also properly align the Roger Wilco program so you can operate with voice with this controller, as I'll

describe later.) Next, we use the menu system to file the flight plan, and we see the appropriate entry in the *SquawkBox* message listing. So, now we're "ready to communicate," which is what we've been working towards in this series of articles.

For the purpose of continuing this training exercise, I'm separating the ATC functions into the usual positions, as if separate controllers cover them. This will prepare you for the continuing growth of SATCO, and ever-increasing controller coverage. Remember, if a function is not covered by a SATCO controller, you "escalate" the communications to the next level in the controller sequence, as explained above. Here is what you could expect on a SATCO flight if all positions are staffed. By the way, as a reality check, I asked my brother-in-law, who has been flying commercial for 30 years, to verify the latest "real world" ATC terminology.

Contact Clearance Delivery "Clearance Delivery, Lear 142DH (spoken as "One Four Two Delta Hotel"), IFR to Chicago O'Hare, with Mike". (As mentioned above, we need to understand that this and other functions may not be staffed by SATCO. If not, we use Ground, Tower, or Center, whichever is next in the ATC hierarchy).

Clearance Delivery responds with "Lear 142DH, cleared as filed, climb and maintain 4000, expect 15,000 ('one five thousand') 10 ('one zero') minutes after departure. Squawk 1742 ('one seven four two'). Contact Detroit Departure Control on 125.52" (sometimes spoken as one two five decimal five two).

Acknowledge Clearance Delivery. "Cleared as filed, climb and maintain 4000, expect 15,000 10 minutes after departure. Squawk 1742. Lear 142DH."

Normally, Clearance Delivery does not provide direction to "contact Ground" and pilots look up the frequency and contact Ground when ready to taxi. In some areas, a request for "startup and pushback" is made instead of the request to taxi. We look up the frequency for Detroit Ground as 119.45. In *SquawkBox* though, we use the ATC **Function** list, which will change us to the proper frequency by double-clicking the Ground Controller, if present.

Contact Ground: "Lear 142DH at the General Aviation ramp is ready to taxi."

Ground responds: "Lear 142DH, taxi runway 21L via _____ (if taxi directions are provided)."

You acknowledge: "Taxi runway 21L via (taxi directions), Lear 142DH."

Unless otherwise directed, "taxi" provides clearance to cross all taxiways and intersecting runways, except the active runway(s) and the runway to which you are taxiing. In this case you proceed to the "Hold Short" line.

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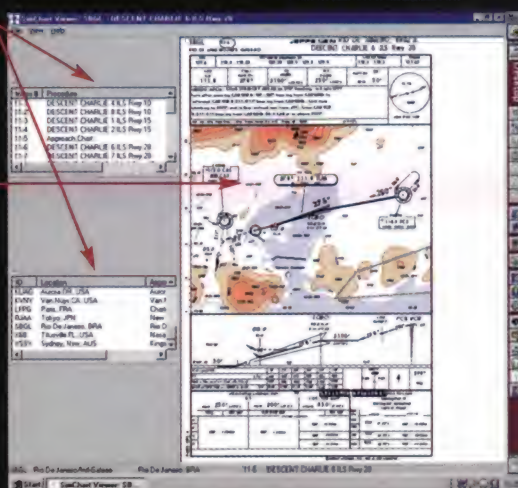
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Flying With SATCO

In real ATC practice, Ground may not provide direction to “contact Tower.” Instead, Tower will see the aircraft at or approaching the Hold Short line at the active runway and contact the aircraft. If Tower does not initiate communications, the pilot should call Tower while approaching or at the Hold Short line.

Contact the Tower: “Lear 142DH holding short runway 21 left, ready for takeoff.”

Tower responds: “Lear 142DH, fly runway heading, climb and maintain 4000, cleared for takeoff, runway 21 left.”

You acknowledge: “Fly runway heading, climb and maintain 4000, cleared for takeoff, runway 21 left, Lear 142DH.”

Note that all ATC direction is read back, followed by your call sign. It’s usually inappropriate to respond to controller commands with “Roger,” though controllers may indicate understanding of pilot statements with “Roger.”

At this point, we take off, fly runway heading and climb to 4000 feet MSL, expecting Tower to give further direction to contact Departure.

Tower sends: “Lear 142DH, contact Departure on 125.52.”

You acknowledge: “Contact Departure on 125.52, good day.”

You Contact Departure (Continuing our climb): “Departure, Lear 142DH, passing 3000 for 4000.”

Departure responds: “Lear 142DH, radar contact, climb and maintain 15,000, proceed direct Jackson.”

You acknowledge: “Climb and maintain 15,000, direct Jackson, Lear 142DH.”

Departure has cleared us to our first flight plan waypoint, the JXN VOR. As we climb through 11,000, we hear:

Departure sends: “Lear 142DH, contact the Cleveland Center on 134.65.”

You acknowledge: “Cleveland Center 134.65, Lear 142DH.”

Note in our last transmission that some “shorthand” is generally acceptable in readbacks, as long as the essential information, like headings, altitudes, and frequencies are repeated.

You Contact Center: “Cleveland Center, Lear 142DH passing 11,000 for 15,000.”

Center acknowledges: “Lear 142DH, climb and maintain FL220 (‘flight level two two zero’), resume own navigation.”

At this point, we have been cleared for our filed cruising altitude of FL 220, and we can fly our filed flight plan through waypoints JXN, AZO, PMM, CLAUD, TADDS, PIVOT, STORY, and PAPPI. However, we’ll be directed to call Chicago Center between JXN and AZO, and then to call Chicago Approach after PAPPI. We’ll also be directed to descend. We may also be directed to cross a particular intersection at a specific altitude, although the PMM STAR requires none.

Continuing with Chicago Approach, we need to get an ATIS report for KORD. Strictly speaking, we need to tell the Center controller we’re leaving the frequency to get ATIS, since we only have one radio. However, in most private and commercial aircraft, it’s unnecessary to leave the frequency, because ATIS can be obtained through a second radio or the computerized systems. Similarly, we can get our ATIS report from the *SquawkBox* ACARS function. Just press the **ACARS** button, type KORD into the “scratchpad,” then press the REQ WX RPT button. This brings up the display shown in Figure 3. This is a METAR report that is equivalent to using an aircraft’s electronic communications to get an ATIS report.



Figure 3: SquawkBox FMS ACARS function retrieved METAR report.

Now that we have our weather information, let’s resume with the handoff from Chicago Center to Chicago Approach after PAPPI:

From Center: “Lear 142DH, contact Chicago Approach on 119.0”

You acknowledge: “Contact Chicago Approach on 119.0, Lear 142DH, good day.”

You Contact Approach: “Chicago Approach, Lear 142DH, passing 12,000 for 11,000, with information ____.” As mentioned earlier, the SquawkBox ACARS function for getting ATIS information does not provide a phonetic identification for the ATIS report.”

Approach responds: “Lear 142DH, descend and maintain 4,000, proceed direct EBENS, expect the ILS runway 27 right.”

Ready To Communicate With SquawkBox

You acknowledge: *"Departing 11,000 for 4,000, direct EBENS, for the ILS runway 27 right, Lear 142DH."*

Now, we need to consult the IAP for 27 right at KORD, if we have it. The SATCO controller may assume we do, and vector us to intercept the ILS final approach course, which would normally be beyond the EBENS intersection. If you don't have the IAP, just "request vectors for intercept." What's the frequency? Again, we can use the FS 2000 map feature to double-click on KORD and see that it's 110.50

Approach sends: *"Lear 142DH, turn left heading 240, maintain 3000 until established on the localizer, cleared ILS 27 right."*

This last direction is extremely important because of an airline accident in the 1970s that occurred in the low mountains west of Washington, DC. A TWA airliner crashed into the mountains after being cleared for an ILS approach into Washington.

One of the pilots was from my high school; he and all others aboard the aircraft were killed. How did it happen? At the time, Controllers were trained so that when they gave clearance for an ILS approach, they understood that pilots would maintain present altitude until intercepting the localizer and glideslope. However, standard ATC verbal instructions at the time did not direct "maintain altitude" as part of the clearance for an ILS approach. In contrast, pilots understood "cleared for the ILS approach" to mean they could descend as desired to intercept the localizer and glideslope. So in this unfortunate accident, ATC assumed the pilots would maintain altitude and clear the mountains, while the pilots descended the aircraft to intercept the localizer and glideslope, flying into mountainous terrain at approach speed. Investigation of this accident led to the revised, current practice of controllers directing "maintain (last directed altitude) until established...." Thus, Approach tells us, "maintain 3000 until established, cleared ILS 27 right, Lear 142DH."

Remember that being cleared for the approach is not cleared to land. The approach itself is cleared by Approach, and Tower clears the landing. We intercept the localizer, and when directed, we contact the Tower. Generally, we've intercepted the glideslope, as clearance for the approach gave us approval to change altitude to conform to the published approach procedure.

After direction from Approach you call the Tower on 126.9: *"Tower, Lear 142DH is established runway 27 right."*

Tower responds: *"Roger, Lear 142DH, wind 260, 10 knots, cleared to land, runway 27 right"*

You respond: *"Cleared to land 27 right, Lear 142DH."*

After landing, we're directed to call Ground, which we do, and we're directed to taxi to the ramp, where we shut down. Then, we can use the *SquawkBox* menu to "Disconnect" from SATCO.

We have just flown a completely realistic scenario, with the example showing communications for all controller positions. As mentioned earlier, SATCO controllers may not be filling all positions in the area that you choose to fly. At the destination, you may not have separate controllers for Approach, Tower, and Ground. If not, the next-filled position above usually performs this role.

Note that with *SquawkBox* in text mode, we don't need to type our callsign, because it's automatically shown for all our outgoing communications. In voice mode, the callsign should be inserted phonetically at the end of our readbacks as shown above.

It's likely that your SATCO flying experiences will vary, depending upon many factors, including the number and experience of both controllers and pilots. Your experience will improve with practice.

Operating with Roger Wilco Voice

The option of using voice communications among SATCO controllers and pilots adds significantly to the realism of the experience, and it's obviously easier than typing responses in the *SquawkBox* chat box. Roger Wilco is the freeware program that makes this possible, replacing earlier means, such as the BattleCom program.

When you start *SquawkBox* version 2.2 (beta), Roger Wilco is also started, and you will probably see a separate Roger Wilco startup dialog box, as shown in Figure 4. Notice that the Channel tab shows my callsign connected to Unicom. Now, I don't know if it's me, or whether the *SquawkBox* auto-tuning of Roger Wilco isn't working, but I've finally figured out how to make it work. And as it turns out, this is essentially how you "tune" Roger Wilco if you are operating the program independent of *SquawkBox*.

Confused by a word or term?

See our Talk the Talk section for an explanation of acronyms and words used in this article. See page 75

Flying With SATCO



Figure 4. Roger Wilco channel dialog at startup of SquawkBox version 2.2 public beta.)

First, you need to be in an area where you can operate a voice controller. Remember that such controllers will have “_V_” in the middle of their callsign. While writing this section, I found that Indianapolis Center was operating with voice. First, I used the FS 2000 GoTo feature to move my aircraft to Purdue University airport, to be in the Indy Center area. Then, I bring up the ATC list and double-click on the Indianapolis Center controller. This connects *SquawkBox* to this controller, tunes the COM1 radio to this controller, and brings up the channel dialog box shown in Figure 5.



Figure 5. Roger Wilco channel dialog after double-clicking “Ind_V_Ctr” in SquawkBox ATC Directory.)

As you can see, there is an Internet address of “63.254.249,” followed by “ind_v_ctr.” In my experience, this display suggests strongly that you are tuned to the proper channel address, but in my experience, you are not, as you’ll see only your own callsign displayed. In fact, most controllers provide the correct address or channel numbers in the lines you’ll see in *SquawkBox* when you connect with a voice controller, and again, in my experience, the numbers in the Roger Wilco box don’t seem to agree, and I can’t listen or talk to the controller.

So, what to do? Refer back to the information you get when you log on to a voice controller. Usually, you’ll see the numbers you need. In this case, the Indianapolis Center controller indicates, “voice on vitez.dynip.com/ind_ctr.” Write down whatever similar address or numbers the controller you connect with indicates in the sign-on lines. Next, go back to the RW channel tab and click **LEAVE**. You will see your callsign disappear. Sometimes, a new box pops up. In the address line, type in “vitez.dynip.com/ind_ctr,” and leave the password line blank if present. I suppose that voice-operating controllers might use the password function, but I haven’t seen it used.

Now, click **JOIN**, or if a box did not pop up and you used the original address line, click **JOIN**. You’ll be returned to the main channel tab, where you will see a display similar to that shown in Figure 6. As the channel is searched, you will see the callsigns of all channel occupants. Note in this example that Indy Center, four pilots (including me – DH142), and one observer are shown. This is the “evidence” you need to know that you are actually connected.



Figure 6. Roger Wilco channel dialog after connecting to correct channel.



I'm sure that using Roger Wilco will be refined as its use with SATCO increases. Meanwhile, I hope you can connect because as Internet bandwidth increases, the use of voice for SATCO will increase and eventually become standard.

Homework

Now it's time for you to try flying SATCO with *SquawkBox*. Look at the SATCO Home Page using the link for "server list and who is online" to perhaps find an area without controller coverage, and try *SquawkBox* to learn all operations. These were covered in detail in the last

issue. Then, step up and GoTo an area in which you can make a short flight with controller coverage for at least departure and arrival airports.

Go through the sequence of connecting to SATCO, selecting the lowest available ATC function in the hierarchy, then get ATIS, request clearance, then taxi, takeoff, departure, and transition to Center. Then, make the transition to Approach, Tower, and Ground. Taxi to the ramp, shutdown, and congratulate yourself on a successful SATCO flight.

Remember that you can put a note on your flight plan to say "newbie," "still learning," "student pilot," or any other means to communicate that you are new. Chances are you're not the only new pilot flying SATCO. Several new users sign up every day.

More Information and Links

The public beta version of *SquawkBox* is available at:
http://www.avsim.com/mike/sb_pc/squawkbox.zip

Download the WhazzUp program at:
<http://www.schiratti.com/whazzup.html>

The SATCO home page can be found at:
www.satco.org





Profiles

*A More Personal Look At
Important People In Flight
Simulation*

Flight Simulator World Interviews Noted Aircraft Designer Terry Hill

Flight Simulator World begins a series of interviews and personal profiles of developers and people in the flight simulation community. These are people who've devoted their time and talents to enhance, develop and further the flight simulation hobby.

FSW: Terry, What is your professional background?

TH: I retired last summer from a position as human resource manager for a dairy production facility in Kansas City, Mo. I held several management positions over the last 15 years in the dairy business including distribution manager, operations coordinator, and finally HR manager. I have a BS degree in HR management and an MS degree in Management. My retirement goal was to teach adult business classes at a small university, but that will have to wait.

FSW: Where and when did your interest in aviation and flight simulation begin?

TH: It seems like my interest in military aircraft started as a tot. I started building aircraft models when I was old enough to squirt glue from a tube. I regularly got in trouble with my mom because I would get up in the middle of the night to work on a model airplane. Naturally, when I saw MS flight simulator for the first time I was delighted. I believe it was on an 8088 machine in monochrome green that

belonged to a friend. When I purchased a 386, I installed MS Flight Simulator Version 4 immediately. Those were the most exciting days of flight simulation – 16 colors, outside views, buildings, dynamic scenery – wow!

FSW: What was your first FS model?

TH: My first sim model was a Boeing F4B-4 for FS4. FS4 did not allow textures, and the flight model was amazingly like a Sopwith Camel. I upgraded it each time a new version of MSFS was released. I was overjoyed when I flew her for the first time in Combat Flight Sim.

FSW: Many of us that have been in the hobby for along time know that you have produced numerous freeware as well as commercial FS aircraft. Which one would you say is the most popular?

TH: In April 1997 my B-24J, "The Dragon and His Tail", was voted "Favorite Aircraft" at FlightSim.Com. However, I have received more e-mail expressing thanks for my Tomcat and Piper Navajo.

**Terry Hill was
interviewed by
Jim Rhoads**



I would have to say the Navajo wins, and that is the reason for the recent update posted on the Abacus Premier site.

FSW: Along the same lines, which one is your own personal favorite?

TH: I think that the Boeing 707 is the most beautiful aircraft ever produced. I have produced both freeware and commercial versions including the first 707, the Dash 80. The Dash 80 is my favorite because of its looks and its historic contribution to aviation.



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FSW: Word has it that you are actually working on your pilot's license, is this true?

TH: Yes, at long last I decided to become an aviator. My son and I are taking lessons together. I have to say it is better than I imagined.

FSW: Do you feel this will enhance your abilities to create FS aircraft?

TH: Well, it will probably give me a shorter path to finished flight models. However, the trick to making good flight models is to have pilots with experience in the specific aircraft provide information about handling characteristics and flight test the sim model. My experience is very limited so I will continue to depend on experienced pilots to provide feedback for my flight models.

FSW: You are viewed as one of the best aircraft modelers in the business, What are your feelings on that?

TH: There must not be very many people doing this. I don't use any development tools that are not available to everyone and it surprises me that my work is so well received.

FSW: You seem to have an endless pool of passion and ideas, how do you maintain that?

TH: I have a lot of help. Without the complete support of family and associates, passion turns into labor and ideas die on the vine.

FSW: Did you ever think a few years ago that you would be able to produce models that are possible today?

TH: I didn't think this level of development would come so quickly. Everything I do depends on the tools available and I have to thank the programmers that continue to enhance and make available excellent development tools.

FSW: Where do you see the hobby going in the near future?

TH: I think we have pushed very close to the hardware limits of most simmers. Perhaps we have reached a point where people will not be willing to upgrade their computers for a few more flight simulator enhancements. I see the technical aspects of the hobby advancing, but perhaps without complete participation of all simmers.

FSW: Your work just seems to get better. Is Terry Hill ever satisfied?

TH: As Will Rogers said, "Even if you are on the right track, if you just sit there, a train will run over you sooner or later." I believe that and strive for improvement in everything I do. I am always satisfied with a newly completed model, but I try to make the next one better.

FSW: Since you are working on your pilots license, what kind of plane do see Terry Hill wanting to own in the future?

TH: I want to own a Lear 45, Ahhh, to dream. I will probably settle for a fixed gear, single engine, 4 passenger like a Piper Cherokee or a Cessna 172.

FSW: Parting statements?

TH: I might be one of the luckiest guys on earth. I work at home doing what I love to do. I am able to share my work with people that love aviation as much as I do. Flight simmers are a unique group of people made up of all ages and all degrees of aviation experience, and I am proud to be a part of this family.

CRIMSON SKIES™



Title page artwork Matt Ridgway







After the Great Depression, WWII and prohibition struck the United States, the country is centered on aviation. With the ground transportation system destroyed, the skies have become the backbone of commerce and transportation. Giant Zeppelins carry cargo and passengers across the sky and militias have been created to protect them. Air Pirates run rampant as the struggles of the different nations create havok and chaos across the skies.

PREVIEW

By Eric Bishop



CRIMSON SKIES™



Crimson Skies is based on the board game created in 1998 by FASA Corporation. Set in a fictional 1937,

the world is very different from the one we know in our history books. After the Great Depression, WWI and prohibition struck the United States, the country is centered on aviation. With the ground transportation system destroyed, the skies have become the backbone of commerce and transportation. Giant Zeppelins carry cargo and passengers across the sky and militias have been created to protect them. Air Pirates run rampant as the struggles of the different nations create havoc and chaos across the skies. You play the handsome

air pirate Nathan Zachary, ladies man and devilish swashbuckler, leading your group of friends for control of the skies.

Take Me Back To The Movies

The experience feels like something right out of an Errol Flynn movie, which is exactly what Zipper Interactive set out to do. The control interface has a 1930s style to it, with music from the "Big Band" era playing in the background. Twenty-four single player missions are available. They range

A First Look At Crimson Skies



*Rescue from a running locomotive (top);
Enemy Zeppelin hanger at 12 o'clock (middle);
White-knuckle adrenaline for your seat of the
pants flying! (bottom).*

from traditional dogfights, escort and ground attack missions to rescuing a beautiful scientist from a speeding train and capturing enemy bombers in mid-flight.

The missions also cover a large geographical area - from Hawaii to New York. Each area is packed with detail and stunning graphical landscapes. Each mission has primary and secondary objectives, a few of which are interrupted with some cool cut scenes to keep the story line fluid. You'll encounter other ace pirates as well, such as a social butterfly and Hollywood ace named Aviatrix Charlie Steel or The Black Swan, a mysterious Air Pirate and Privateer. They're all waiting to take you down in a blaze of glory.

Each mission is introduced by a briefing. The briefing is complete with voice over, explaining the mission in detail. A geographic map shows you the locations of your primary and secondary objectives. In addition to the mission briefing, you're also greeted with other personalities of your squadron breaking in and giving little hints of the enemy tactics and personalities you'll encounter. Crimson Skies almost feels a little like Wing Commander, but without the corny acting. You won't be taking off from the ground in these missions, either. Everything happens onboard huge Zeppelins made into aircraft carriers, complete with antiaircraft guns and docking stations. The missions are fast passed and full of action as you fly through canyons, waterfalls and city buildings. You'll do this as you dodge enemy flak and 50-caliber bullets, while trying to shoot down your adversary and complete your mission objectives.



*The aircraft you'll be flying are something
hard to explain. Half racer, half WWII fighter,
mixed together with a 1950s style muscle
machine. They're all armed with 50-calibre
machine guns, as well as other types of
cannons, air-to-air missiles and rockets.*

A First Look At Crimson Skies

Coming in on the Hawaii beaches, target ahead! (top); Pirate aircraft after strafing run (middle); Very nicely rendered scenery (bottom).

Fly by the seat of your pants

The aircraft you'll be flying are something hard to explain. Half racer, half WWII fighter, mixed together with a 1950s style muscle machine. They're all armed to the teeth with 50-calibre machine guns, as well as other types of cannons and air-to-air missiles and rockets. As you dive out of the clouds onto that enemy Zeppelin, you're ready for anything. As you open with a full onslaught of weaponry, you're sure to inflict maximum damage. This is a good thing since they are usually shooting back!

Each aircraft is extremely detailed with individual squadron paint jobs and markings, as well as full moving parts and shell casings being ejected as you squeeze the trigger.

Each aircraft is extremely detailed with individual squadron paint jobs and markings, as well as full moving parts and shell casings being ejected as you squeeze the trigger. Choose from twelve airplanes; each can be modified to your liking. You can make choices for armament, engine and armor, depending on the type of mission at hand. The weapons to choose from ranges from Zeppelin busting torpedoes to standard armor piercing bullets. The flight model of these beasts might be something out of a fictional storybook, but they are fun to fly and something anyone can jump right into. Docking on the Zeppelin is a bit on the tricky side but flying through the enemy Zeppelin hangars results in a pure adrenaline rush. Attacking Zeppelins is a challenge because they'll fire in defense and try to shoot you down with their mounted flak guns.

The graphics in Crimson Skies are beautiful and support all the latest hardware with resolutions up to 1024 x 768. The graphics engine used in this simulation is from the next generation of *Mech Warrior 3* and the results are spectacular. Each mission area is extremely detailed. Shrubs and bushes rush past your canopy and trees or buildings can get in your way. Some of the hangars and other structures in Crimson



A First Look At Crimson Skies



Damage off the port canopy...close call! (top) and mission map and briefing screen (below).

directions as you score a direct hit. The sense of speed is very good and the ground detail helps with this. Get too close to the ground and trees and shrubbery will rush past your canopy. Many missions have you flying through hangars and caves, so you really have to be on your toes to get these missions accomplished since barn storming a hangar or cave can be a bit tricky. When you come in for your attack run and the flak guns are bursting shells all around, your aircraft will actually shake from the cannons being fired off your wingtips. When the missiles hit home on their Zeppelin target, you're greeted with a satisfying explosion and pieces of Zeppelin flying everywhere. The final death spiral of the Zeppelin is also something a true air pirate could admire. The hull slowly dives into the ground engulfed in flame and destruction.

Sound effects in *Crimson Skies* are also done in top-notch quality. Supporting all the latest hardware advances, you'll be surrounded in sound. As wingmen come in over your three o'clock you'll actually hear them in this direction, given you have the correct speaker system. This really adds to the total air pirate experience, and with the music of the 1930's playing in the background, it is really a treat.

Crimson Skies will also support multiplayer combat over MSN Gaming Zone and the Internet, so you'll be able to take on real adversaries in dogfights or play cooperative missions if you choose. It will also support online squadron play, so squadron-to-squadron challenges can be met daily. Although I haven't experienced this in this current build, if it's like other Microsoft products, the online play should be good.

Conclusion

My overall thought on *Crimson Skies* is that Microsoft and Zipper Interactive definitely have a hit. This early beta we were given to test drive had most of the 24 missions fully integrated. Although some elements, like the voice-overs, were not incorporated yet, it still seemed to be a solid simulation. It's fresh design and concept and engrossing story line is one that will be welcome in the flight simulation community.

The constant action and quick learning curve is also a nice treat and a nice compliment to the hard-core study simulations of late. This is truly a new and overall fresh idea to flight simulation. Look for *Crimson Skies* hitting your retail shelves very soon.

Skies are truly amazing. Here, too, the attention to detail is mind blowing. On one mission, I simply could not keep my mind on the mission objectives because I was so overwhelmed at the scenery. Instead, I set off to explore - probably not the best idea in such a hostile environment.

The enemy AI aircraft in this build will definitely take you for a roller coaster ride. They'll bank, dive and go vertical to try to shake you off their six. If you're not careful you'll end up with one of them on *your* six, and getting them off is a different set of challenges. While you fly, the music in the background is playing to the music of the big bands, and it really helps get you "In the Mood" of the simulation.

Things that go Boom

Special effects in *Crimson Skies* are down right beautiful. Flak bursts and explosions are as real as they get, with pieces of objects flying in all

For more information:

Developer Zipper Interactive
Publisher Microsoft Corporation
<http://microsoft.com/games/crimsonskies/>

Round Robin Adventure

By Al Pelletier



Hi again Flight Simmers. This adventure takes place in the rugged and mountainous interior of British Columbia, Canada. It's one of the toughest areas of the world for any type of plane to fly regular routes. I flew this route with two airplanes: a Dornier and the old DC-3 Dakota (shown above in the title image).

You can fly in and out of the route in IFR conditions with no problems with the more modern airplane. But with an aircraft that has a maximum of 500 to 900 feet per minute rate of climb, you have to fly in VFR conditions out of Castlegar to find an area that will allow you to climb to Instrument Meteorological Conditions (IMC) from Visual Meteorological Conditions (VMC).

The DC3 I flew is by Bill Rambow, Roy Chaffin and Jan Visser. This, folks, is simply the BEST airplane that I have ever seen for MS Flight Sim, since 1982! This airplane and all the necessary scenery for this article can be found on the Internet from the link listed at the end of this article. A list of all the necessary, or just nice to have files can also be found using the appropriate links specified.

Round Robin Route

This Round Robin takes place in the interior of British Columbia, Canada. This is a very rugged and mountainous area. In fact, it is one of the toughest areas of the world for any kind of planes to fly regular routes.

Kelowna (CYLW)
to
Penticton (CYYF)
to
Castlegar (CYCG)
to
Kelowna (CYLW)

Round Robin Adventure

Round Robins

If you've flown previous Round Robins, skip the next paragraph, jump right in, and have fun. For the experienced flyers, please be patient through all of the explanations, directions and extras. I direct this at newcomers to the flying world. I must stick to plain language.

For those who are new to this, Round Robins are published with the intent of having Flight-Simmers fly, look at the scenery, refresh our Geography, practice our cross country navigation, do some approaches at different airports all over the world, and have some FUN.

In the message, you will be getting info like: airport departure and runway numbers, VOR and ADF frequencies enroute, two or three middle airport destinations, and instructions for either VFR or instrument approaches. Then back to your point of departure (Round Robin). You will also be given ILS and LOM frequencies, visibility minimums, procedures etc. You will get info on the scenery needed to complete the flight and where to get it. Also, who created the scenery (for non-commercial) and a little background on the geography of the area. After you do a few of these, you will have a much better command and understanding of the different types of published procedures. You will learn to handle a lot of information in a very short time, while still maintaining control of your aircraft.

May I also suggest, that you READ the route a couple of times before beginning so that you'll have the flight plan fairly clear in your mind.

Recommended Add-on Scenery Files

This Round Robin was created using the Microsoft Default FS 2000 scenery. For the FS98 users, I recommend the scenery SWBC98V2.Zip by Douglas Keech, of Kitimat BC. It can be found on the Round Robin Internet site at the link on page 35. It can also be flown with any Simulators that have the required Nav aids and Airports.

First leg:

**Kelowna (CYLW)
to
Penticton (CYYF)
Approximately 40 nm.**

This first leg is the same for the Twin Turbo or the DC3 and will be a VFR flight over the Okanogan Lake.

- ✈ Select Kelowna Airport runway 15
- ✈ Dial in the Naramata NDB (UNT) frequency 312 on your ADF.
- ✈ Taxi to and take off from runway 15, making a right climbing turn to 3,500 feet, on a heading of 210 degrees, to establish over Okanogan Lake.
- ✈ Follow the lake around the bend and down to Penticton. Past the Naramata NDB, dial in the Penticton NDB (YYF), frequency 290 and proceed in for a straight in visual approach to runway 16 at Penticton. (If you choose to go in IFR conditions, I've included the approach plate for a NDB procedure to Penticton runway 16).
- ✈ 5 nm back, you're cleared to land on runway 16 for a full stop
- ✈ Check that your gear is down and locked.

LAND Penticton



Climbing out from Penticton runway 16

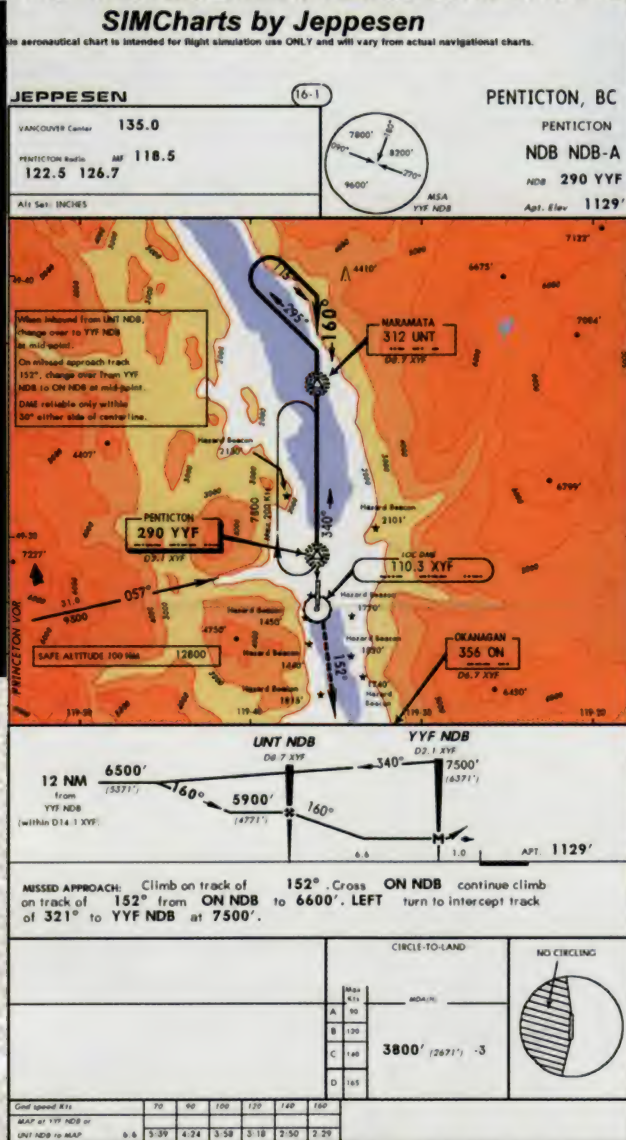
Second Leg:

**Penticton (CYYF)
to
Castlegar (CYCG)
Approximately 80 nm**

- ✈ Go to your World/Time and Season menu and set your clock to 16:00, and the season to Summer

Adventure in British Columbia

Approach plate for Penticton



- ➔ Go into your World/Weather menu and edit your weather to Overcast Stratus 8/8, based at 5,700 feet, tops at 10,000 feet, 10 nm visibility in moderate rain showers. Wind 180 degrees at 12 mph. If you want to experience the complications of the ILS approach at Castlegar, you must make the weather as per instruction. You'll really enjoy the ride!
- ➔ Taxi to runway 16 at Penticton.
- ➔ Dial in the Okanagan NDB (ON), frequency 356 on your ADF
- ➔ Take off from runway 16, using the maximum rate of climb for your plane. Home the Okanagan NDB until on top.

➔ When on top of Okanagan, turn left to heading 070 degrees and continue climbing to 10,500 feet. Tune in and home the Castlegar NDB (CG), at frequency 227. *Note that if you are flying the DC3, you can't attain an altitude of 7,000ft over the Okanagan NDB. Circle left of the NDB and shuttle until you're at 7,000 altitude, then carry on as per instructions above.*

- ➔ Enroute to the CG NDB, dial in the Cranbrook VOR, frequency 112.1 on NAV 2. The CG NDB is located 59 nm out (before) the Cranbrook VOR. By having this information, you will have a fairly good idea of where you are just before you get on top the CG NDB. At this time you can also dial in the localizer (LOC) at frequency 110.1 on NAV 1. Set your OBS to 176 degrees in preparation for an ILS approach to Castlegar runway 15 (heading 150 degrees, elevation 1,624 feet, length 5,300 feet)

Note that this LOC/DME approach is offset. Over the Brilliant NDB, you are at 5,500 feet altitude, and the airport is only 1.3 miles away to your left. If you can't make it down that fast and land safely, you are to overfly the airport at 3,500 feet and circle to the right to set yourself up for a visual to runway 15. This is a real tough one folks. I took 5 tries at it before I made it in. In British Columbia, this place is known as one of the hardest known approaches. There are mountains at each end of the runway. Have a good look at the detailed maps, available for download from the Internet site below!

- ➔ Over the Castlegar NDB, turn left to heading 041 degrees and descend to 9,000 feet. When reaching 9,000 feet turn left to heading 221 degrees and intercept the LOC. There is no glideslope available for this approach. **Do not** go below 9,000 feet until over the CG NDB, and you are established on the LOC. At that point you can begin a 3-degree glide, to be at 5,500 feet over the Brilliant NDB.
- ➔ Establish on the LOC. Once passed the CG NDB, dial in the Brilliant NDB (YK), at frequency 269, and continue with the approach. Over Brilliant, you should be at 5,500 feet and have the airport visible, down to your left. Continue as per instructions above.
- ➔ You are cleared for landing on runway 15.
- ➔ Check that your gear is down. *If you can't make it down safely, you are to overfly the runway at 3,000 feet ASL and circle right in a tight turn, and proceed for a visual approach and landing to runway 15.*

LAND Castlegar

Round Robin Adventure



**Approach plate
for Kelowna (left)
and
topographical
chart for Kelowna
(right).**



trip VFR". Castlegar is one of the hardest areas in the World to get out of in IMC conditions. But today we're lucky. The wind is in our favor, and there is a Navaid to help us out!

- ✈️ Go to your World/Time and Season menu and set your clock to 18:00, season summer (month of July).
- ✈️ Keep weather as per the last leg. Its time to pick up your passengers and go!
- ✈️ Taxi to and take off from runway 15.
- ✈️ Dial in the Champion NDB (EF), frequency 206 on your ADF. The Champion NDB is our “ace in the hole” this time. The wind is from the south, so a runway 15 departure heads us right toward the EF NDB, which is in a bit of shallow valley.

Third Leg:

Castlegar (CYCG)
to
Kelowna (CYLW)
Approximately 95 NM

Now here is an interesting situation. We have mountains all around us, in an airplane that can only climb at 1,000 feet per minute. We will be in IMC conditions, over terrain with not too many Navajids to guide us and make it 100% safe. How did they do it, I asked an old DC3 pilot? "We winged it" he replied. "We would fly VFR to an area where we knew we could climb safely to altitude, or we would fly the whole

Confused by a word or term?

***Check the Talk the Talk section
for an explanation of acronyms
and words used in this article.
See page 75***

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P-40E "KITTY HAWK"



SBD "DAUNTLESS", SB2C "HELLDIVER"



DH82A "TIGER MOTH"



"BLENHEIM" Mk.IV, "LYSANDER" Mk.IIIA



B-26 "MARAUDER"

Round Robin Adventure



Castlegar Topographical chart for Castlegar (left) and a very challenging approach to Castlegar runway 15 (right).

✈ Over EF, turn right to heading 195 degrees, and continue on this heading until you are at 9,000 feet. Then make a right turn to heading 290 degrees. Continue climbing to 11,500 feet, and dial in and home the Rutland NDB (EX) on frequency 374. (It's located over the Kelowna airport and approximately 85 nm out. So you might not get reception right away. Actually I never had it until half way there. When this happens, though, I stay busy trying to dial in other Navaids in the area, and usually this will give me a fairly good idea of my position. On this occasion, I dialed in the Princeton VOR 113.9 and got a bearing and distance to confirm I was heading in the right direction. In an emergency situation, I would be well prepared with a fairly accurate position).

✈ Enroute to the Rutland NDB, dial in the Localizer at frequency 109.5. Set 146 degrees on your Nav 1 OBS in preparation for an LOC/DME approach to runway 15 at Kelowna (actual runway heading 152 degrees, runway length 7,300 feet, elevation 1,409 feet). This is a 6-degree offset approach, and the runway will be to your right, in order to avoid a 4,000 foot hill on the way. *Note on the approach that the LOC is only reliable to 20 degrees either side of the runway. I also lifted the weather when I got reception on the Rutland NDB. This allowed for a beautiful early evening sunset on the way in. I got DME reception on the LOC about 15 nm out which gave me a good fix as to how far the Rutland NDB was and my distance from the Kelowna airport.*

✈ Over the Rutland NDB, dial in and home the Kelowna NDB (LW) on frequency 257, and begin descent to 7,500 feet. Over the LW NDB, turn to heading 326 degrees and maintain until you are at 13 nm DME. Then turn right to heading 011 degrees, maintain this heading for 2 minutes, then turn left to 191 degrees and descent to 6,300 feet to intercept the LOC.

✈ 5 nm back you are cleared for landing on runway 15.

✈ Check that your gear is down.

LAND Kelowna

Welcome Home!

About the author.....

Al was born in Matane, Quebec in 1948. He served 25 years as aircrew in the Royal Canadian Airforce, in a non-pilot role. His job centered on RADAR, Forward Looking Infrared (FLIR) and radio communications. He has served over 6,000 hours in everything from the Canadair Argus, the Tracker, a Sea-Ling Helicopter, DC-3s and P-3s.

Al retired from the RCAF in 1990 and is now the owner of a computer retail store. His hobbies include fishing, gardening and, of course, flight simulation.

Visit Al and his crew at <http://www.simwings.net>

Here's Some Files We Recommend

Set your browser to: <ftp://wings.ark.com/pub/fullthrottle/RoundRobins/bcadventure>

If you would like to fly this Round Robin using the Douglas R4D-6 NATS DC 3 from Roy Chaffin, Bill Rambow, and JanVisser, you can download it from here as well.

FS 98 scenery by Doug Keech: [sebc98v2.zip](#)

An excellent twin turbo (Dornier): [cse_d328.zip](#)

FS 2000 version of the R4D-6 NATS DC 3: [wjrdc3v4a.zip](#) and [wjrdc3v4b.zip](#)

Patch file for FS 2000 version: [r4dv4pa1.exe](#) and [wjrdc3a3.zip](#)

FS 98 version of the R4D-6 NATS DC 3: [wjrdc3b3.zip](#)

Full size topographical maps that appear in this issue: [Castlegar_topo.bmp](#) and [kelowna_topo.bmp](#)

You'll find files for all of the *Flight Simulator World* Round Robins at:

<ftp://wings.ark.com/pub/fullthrottle/RoundRobins/>

Acknowledgements

Many thanks to Chris Squire for test flying the route. Chris is a retired military pilot with over 12,000 hours of flying.

Very special thanks to Doug Keech for the FS98 Scenery and to Bill, Roy and Jan for the magnificent Dakota/DC3.

Special thanks to Jeppesen for the use of their charts. These charts are reproduced with permission of Jeppesen Sanderson, Inc. **They are not to be used for navigation.** The charts are Copyright © 2000 by Jeppesen Sanderson, Inc. All Rights Reserved.

Letter From Editor continued from page 2

We'll be putting more emphasis on "how to" articles in upcoming issues so that much of this know how and new technology can be made available to the entire development community. I think the best definition of *technology* is simply *a better way of doing things*. Learning to do more things, and in new ways is what flight sim development is all about. I am more enthusiastic about what the third party development world is doing now than I have been for quite a while!

Even more virtual reality

There is another aspect of this trend toward realism, which is not related to add-on development at all, but is found right in everyone's virtual cockpit. What I am referring to is the quest for learning to fly the simulator according to established and correct principles, as seen in the real aviation world. The simulator pilots I am talking to are putting a lot more emphasis on "doing it the right way." In the past, the vast majority of virtual pilots would simply start the simulator, start flying in whatever direction they wanted, and approach and land anywhere and any way they liked. Little or no attention was paid to how they flew, how they navigated, and how they landed.

I have to admit to a certain amount of this myself.

What I am hearing now is that people want to learn how to do all this correctly, according to the way real-world pilots do it. In response to this, we will be putting even more emphasis on this aspect of simulation, so that you can include these routines in your virtual flights.

The interesting thing is that as the simulated flight world gets more serious, the real world aviators are starting to have a lot more regard for PC flight simulation. There is more crossover between real and simulated aviation than ever before. This is something that has been a long time coming, and it is a welcome sight in this flight simmer's eyes.

Keep the blue on top!

Virtual Flight School

Flight simulation is becoming more realistic and more real-world aviation information is being applied to PC simulators as they progress. Several real-world aviation information companies, such as Jeppesen, recognize this. They're becoming involved not only in database information for Microsoft's FS 2000 and other simulators, but they also offer their own add-on products,

being a flat piece of asphalt with lights and numbers painted on it. Makes my heart race just thinking about it. <Grin>

Understanding Approach Plates: The ILS Approach

including Jeppesen Simcharts, a CD based library of instrument approach charts. In addition, Dauntless Software's Simplates 2000 presents an additional alternative for virtual pilots.

Are instrument approach charts necessary? Well, it depends on how far you want to extend your flight experience. As in the real world, some pilots are just fine and happy fooling around in the air on a nice puffy-cloud day, when the air just seems like glass.

Then there are those "type A" guys, such as me, that don't want to be limited to those nice puffy-cloud days. They would rather be trapped in a motorized aluminum can with wings traveling at 100 mph, putting all their faith in a piece of paper, a clock and the instruments in front of them. Add breaking into a sweat while convincing your brain that what your body is telling you is just a lie. All in the comfort of no visibility, with the reward for all of this

So you figure you're a "type A" kind of guy or gal yourself and rush out to get a set of plates. You take a good look at them, only to find out that you're just as lost *with* them than if you were flying in the "goo" *without* them.

Lets take a look at approach plates, and hope when we're done, you'll have a better idea about how to read and apply what you have learned to your flight experience.

Several different types of approaches are available. All are subject to the type of approach aid that you have available to your service. We cannot cover every aspect of approaches and types in this article. Instead, for this issue we will focus one of the more common ones that you might use on a typical flight: an *ILS* and *Localizer Only* approach.

By Jim Rhoads

Virtual Flight School

are based on the performance and maneuverability characteristics of the aircraft. Categories are based on 1.3 times stall speed in landing configuration (VSO)



Figure 3: The performance categories of the approach plate

For example, it's realistic to believe that a Cessna 172 could hold 90 knots during the approach, and that puts the 172 in "Category A." If you look in the box, 90 knots would give us a localizer approach time of four minutes and eight seconds (4:08). If we were flying a King Air 200, the approach would not be acceptable given that the stall speed of the aircraft, which is 98 knots. That would put the King Air 200 more likely in "Category B", which would have an approach time of three minutes and six seconds (3:06) at 120 knots for the approach.

Approach Categories are based as follows:

90 knots and below	Category A
91 knots to 120 knots	Category B
121 knots to 140 knots	Category C
141 knots to 165 knots	Category D
166 knots and above	Category E

Overview

I've just given you a basic understanding of plates. Now we'll take a more practical approach. I've supplied the approach plate for Marion Indiana (MZZ) in Figure 4. We'll set up for a quick flight to MZZ and study the plates a little closer for an approach.

ILS RWY 4

MARION MUNI (MZZ)
MARION, INDIANA

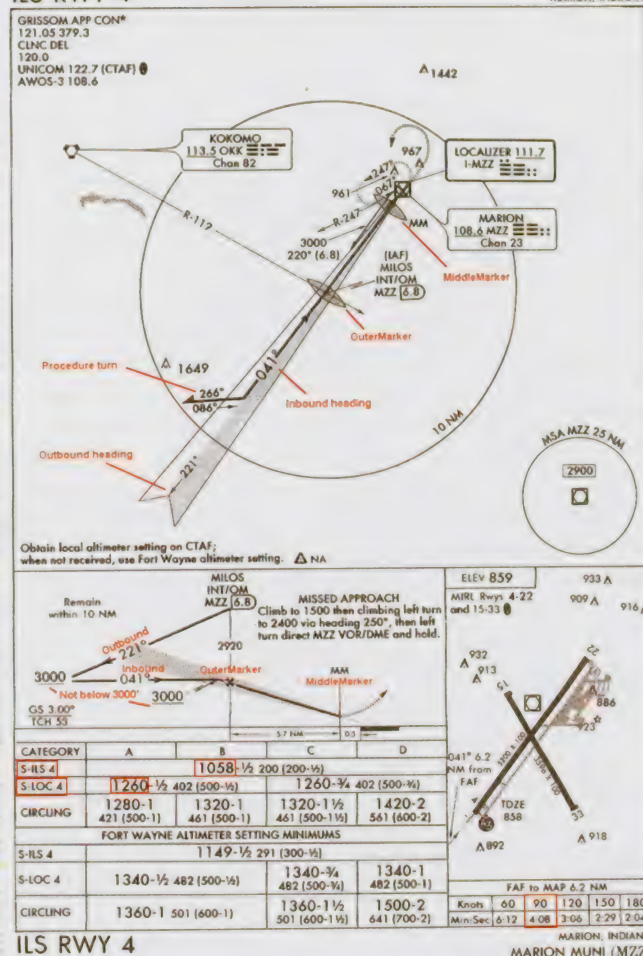


Figure 4: The approach plate for Marion, Indiana (MZZ)

At the top right corner of the plate, we can see that this is indeed the approach for Marion Municipal (MZZ), at Marion, Indiana. To the left, the plate indicates that it is the ILS approach to runway 4 (RWY 4) and just below, we see that Grissom Approach is the controlling facility on frequency 121.05. When we depart Marion, the Clearance Delivery frequency would be 120.0 and the Unicom for Marion is 122.7. Marion just happens to have an Automated Weather Observing System (AWOS) with a frequency of 108.6.

The approach section shows several other frequencies that are important to our approach as well. Marion has a VOR on field with a frequency of 108.6. We'll be tracking the VOR inbound to Marion to establish ourselves, and the localizer frequency for the approach is 111.7. Don't be confused, as the frequency is the same one that we will do for both the ILS and the Localizer Only approaches.

Understanding Approach Plates: The ILS Approach

We can also establish our initial approach fix off of the Kokomo VOR (radial 119) on frequency 113.5

Look at the arrow shaped object that fans out from our approach course. At the tail you'll see the heading of 221 degrees, which is the outbound course we will track before establishing the procedure and inbound course for our final approach. It makes sense because you can see that the black line with the 041 heading has a little barb arrow directing us to the inbound, then the reciprocal or opposite heading outbound would be 221 degrees. That darker main line is our main approach course once established.



Follow the outbound course of 221 degrees, make your procedure turn and intercept the ILS, maintaining 3000 feet ASL

The plate also shows us several football shaped objects. These are the Middle Marker (MM) and the Outer Marker (OM). The Outer Marker happens to be both the Initial Approach Fix (IAF) for the approach and the MILOS intersection (intersection of the Marion VOR radial 221 degrees and Kokomo VOR radial 119).

Over to the lower right we can also see that we have an MSA of 2900 feet MSL within a 25-mile ring of the Marion VOR. Now, go to the profile view. The profile view shows us the approach course heading of 221 degrees, beginning at the established point of the MILOS Intersection, tracking outbound. Follow the line down to the 3000. The 3000 is underlined. This denotes that you can descend down to 3000 feet but not below, and it is the beginning of the procedure turn. After you have performed the procedure turn, you'll be intercepting the localizer radial 041 inbound. Note again that there is still a 3000 underlined until you get to the Maltese cross looking object. The Maltese cross

is the MILOS intersection and the Outer marker. At this point you should be intercepting the glide slope for the approach and can begin your decent.

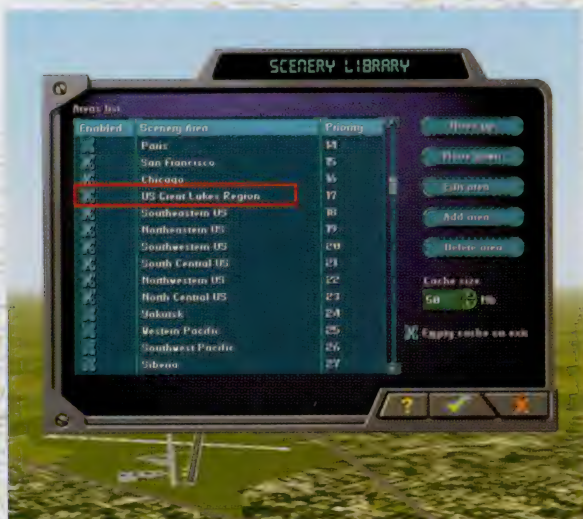
Under the profile we already figured we were an approach "Category A" aircraft. The MZZ ILS 4 approach shows that all categories will have a decision height of 1058 feet MSL and a Runway Visual Range (RVR) of ½ mile and 200 feet. The numbers in parenthesis are for military use and do not apply to civilian aircraft. Look at the Field elevation for MZZ, which is 859 feet MSL. Add 200 feet and you have the approximate 1058 feet decision height for the approach. In other words if you have tracked the glide slope all the way down to the decision height of 1058 feet, and you still cannot see the runway at the missed approach point, you must start the missed approach procedure that you see footnoted in the profile box.

You're probably asking what the lower boxes are, with similar information, but have the title bar Fort Wayne Altimeter Setting Minimums. Just in case Grissom approach control is not working, and the Marion AWOS is down, you cannot get a current altimeter setting by calling Fort Wayne approach and use their altimeter settings. However, all these minimums would still apply.

Let's say that the glide slope is out of service and you're left with a *Localizer Only* approach. All the same would apply except that once you reached the IAF you would descend rather quickly to your Minimum Decent Altitude (MDA) of 1260 feet, while timing the approach from the IAF to the Missed Approach Point. Remember that you can find this time in the performance category boxes at the lower right. In this case, holding an approach speed of 90 knots, it would take four minutes and eight seconds (4:08). If you don't see the runway when the time expires, and have not descended below 1260 feet, you must do a missed approach.

Application

Now it's your turn. To simplify things a bit, I've created an FS 2000 virtual flight school situation for you to download. The name of the flight is **MZZ Marion 4 ILS**. If you have downloaded the file from the link included at the end of this article, and unzipped the file to your FS 2000/Pilots directory, you're ready to go. Also be sure and have your **US Great Lakes Region** enabled in your **Scenery Library**. You can access this from the menu **World | Scenery Library**.



Make sure you have US Great Lakes Region enabled in your Scenery Library to fly the approach situation we have created.

This flight lesson puts you in the air at 3000 feet northeast of the runway tracking the 041 radial to the Marion VOR. If you look at your approach plate, this puts you in the upper right hand corner of the plate, and should set you up to fly almost right down and over the top of the runway. This also puts you in line with the outbound for the localizer. All frequencies are selected for you. VOR 1 indicator is setup for the localizer/glide slope and VOR 2 indicator is the MZZ VOR.



The approach situation is already has your radios set, with the VOR 1 indicator setup for the localizer/glide slope. VOR 2 indicator reads the MZZ VOR

I know some of you're asking "wouldn't ATC just give me vectors to eventually join the localizer approach?" Yes, more than likely. However, what happens if Grissom is closed and Chicago Center cannot pick you up? Remember that Marion does not have a control tower—something that very likely could happen in real life. Therefore, you had better know how to do this on your own.

Here goes...

Maintain that current heading and altitude.

Track the VOR 2 indicator inbound until you see the to/from flag flip. Remember that you're very close to the MZZ VOR and it is becoming very sensitive. So, try to maintain the current heading and do not chase the needle.

Once the to/from flag flips you might want to crab (turn) the aircraft slightly to the left about 5 or 10 degrees. You will do this because you were tracking the VOR inbound and the localizer is lined up with the runway, which is to the left of the MZZ VOR. Switch your focus over to the VOR 1 indicator now.

This might get a little bit confusing but hang in there!

Watch the localizer needle and be patient while it comes alive. It will probably swing over to the left. Here is where it may get confusing. You are outbound on the localizer so you'll get what is called reverse sensing of the localizer needle. In other words, instead of the typical method that you use to track VOR needles which is turn toward the needle to correct and center, you'll have to turn away from the needle to make it center.

Make small corrections and wait, as the localizer is much more sensitive than the VOR signal. So if the needle is to the left, turn slightly to the right and wait until it centers. Not centered yet? Turn just a tad bit more and once centers maintain the heading.

You should have heard the middle marker start beeping by now. Just keep trying to track the localizer and maintain you're heading while waiting to hear the middle marker sound off.

Once you hear the middle marker start beeping and the blue marker light starts to flash, look at your clock and continue outbound for 60 seconds.

At the end of 60 seconds, you can begin your procedure turn, which the chart shows as a black barb that hooks away from the course line and is a turn to a right heading of 266 degrees. You can also begin what is known as the five T's. **Turn**, (you just did this) **Time** (look at your clock) **Tune** (radios are already set in this case) **Throttle** (90 knots) **Talk** (You would announce that you were in the procedure turn).

Hack the clock again and proceed on the 266-degree heading for 60 seconds.

At the end of the 60 seconds, you'll turn to the opposite heading of 086 degrees. Remember! Standard rate turns and 90 knots. Now is a good time to do your GUMPs check. (Gas, Undercarriage, Mixture, Prop) and get a notch of flaps in. I realize that you're in fixed gear Cessna but it is good practice. The heading that you're now on will allow you to join up or intercept the localizer for your final approach to Runway 04.

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Continue this heading, and when the localizer needle begins to swing toward the left, try to turn to join and center it. Admittedly, it seems as if the localizers are quite aggressive in FS 2000 and probably more so than in real life. Therefore, you may have to lead in a little early or join it with vengeance!

Are you still at 3000 feet and have the localizer pegged? Good job. Keep it at 90 knots and any moment you should hear the outer marker visual and audible alarm. Look at your glide slope needle. If you have maintained 3000 feet, you should have the glideslope needle centered, just like the profile charts shows at the interception point, being the outer marker at 3000 feet.

If your needle is centered, and you're airspeed is 90 knots, you should be able to maintain that with around a 500 feet minute decent rate. Adjust as necessary but try to get back to the 500 feet rate if you can. This is about right for a Cessna 182 or similar type of aircraft. Make small corrections and be patient as you try to keep both the glideslope and localizer needles centered.

The approach plate has a Decision Height (DH) of 1058 feet for ILS 4. Do not descend below the glide slope or below 1058 feet. Then look up when you reach this altitude. You must start the missed approach procedure if you cannot see the runway and you hear the middle marker. This is stated on the profile view of the approach plate. If you can see the runway then you should be in fine shape.

If you want to try the localizer approach, load the MZZ Marion 4 ILS situation again and do the exact same steps as before. However, this time when you're established on the final approach and at the outer marker, descend rather quickly down to 1260 feet and time the approach from that point. Ignore the glide slope needle, or change to VOR2 indicator (which has no GS), but don't forget to change the frequency as well. Do not descend any lower than 1260 feet. At the expiration of four minutes and eight seconds (4:08) if you do not see the runway, you'll have to do the missed approach procedure.

Other Options

As mentioned, many other types of approaches are possible - in real life Marion MZZ has four. An ILS runway 4, a VOR or GPS for runway 4 and 32, and a VOR or GPS for runway 22. This article has only scratched the surface about the many types and kinds of approaches that are available to the instrument pilot.

In the future, we'll explore other types of approach procedures and Chart information. Instrument procedures are challenging, and require great discipline. Nothing can describe the satisfaction of seeing the runway break out before you after a long haul in the soup. Despite what your eyes, brain and body tell you, the instruments are right.

Challenge is why most pilots do what they do. However, learn to do it smart. Learn how to control the aircraft with discipline and

accuracy, and try to follow the procedures exactly. This will make you a better, safer pilot with an understanding that challenge has its rewards!

Learn more about the titles in this article by visiting the Internet

You will find Jeppesen Simcharts on the Internet at:
<http://www.jeppesenpcpilot.com/>



Information on Dauntless Software's Simplates 2000 on the Internet at:
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The FBO at your local airport can also be a good source for approach plates and charts. Check them out and see what they have!

Downloading FS 2000 situation files

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Profiles

*A More Personal Look At
Important People In Flight
Simulation*

Flight Simulator World interviews Austin Meyer — Developer of the X-Plane Simulator

Flight Simulator World begins a series of interviews and personal profiles of developers and key people in the flight simulation community. These are people who've devoted their time and talents to enhance, continue to help develop and further the flight simulation hobby.

FSW: Austin, give us a quick rundown of what X-Plane is all about.

AM: All other flight sims in the industry operate by *copying* the *known performance* of the aircraft that they are simulating. X-Plane is different in that you enter the *geometry* of the airplane that you want to fly, and X-Plane will then figure out how the airplane will fly, based on this geometry.

FSW: What's the advantage?

AM: The advantage is that if you get the *geometry*, or *shape* of the plane right, then the plane will fly right, allowing you to experiment with new designs, test-flying each one on the computer. The

computer is telling you how the plane will fly, not the other way around like with all other sims, where the computer is blindly spitting the performance *you gave it* right back out at you. The performance that you (or the aircraft author) entered into the aircraft design. Various companies are using X-Plane to test out design concepts by entering their designs into the sim and then test-flying them on the computer.

FSW: What about navigation?

AM: X-Plane also has the full instrument suite of VOR, ILS, NDB, DME, and GPS for instrument flight, and also scenery (digital-elevation maps) for all of the United States, Alaska, Hawaii, Canada, Europe, Australia, and Japan for your visual flying. About 18,000 airports are there as well.



FSW: Is aviation the driving force for X-Plane, or is the computer hardware the driving force?

AM: Aviation is the driving force, computer hardware is the *limiting factor*. I want to do everything in aviation, but computers cannot handle all of this, so I add everything I can within the limits of the computer. Fortunately for us,

**Austin Meyer was
interviewed by
Arnie Lee**

computers get better every year, so I am constantly able to add new features. Bottom line: I have everything in X-Plane that can fit inside a modern CPU and 3D card at about 30 or 40 fps. Adding features as CPU and 3D cards allow, without getting the frame-rate below about 30 or so on a decent modern system, 40 or so on a high-end machine.

You want specifics? X-Plane now simulates jets, props, gliders, rockets, VTOLS, helicopters, runways, helipads, aircraft carriers, tow planes, building-top helipads, seaplanes, drops from B-52 launch aircraft. VFR flight, IFR flight, artificially intelligent air traffic control, all times of day, many varieties of weather including everything from clear skies to zero ceiling and visibility, windshear, microbursts, thermals, turbulence, weather rate-of-change, and real-weather where actual weather is downloaded off the net. You can fly on Earth or on Mars (using actual Martian terrain, gravity, and atmosphere data from NASA probes, which is very accurate).

Put another way, today's computers can do a pretty good job of filling the bill for aviation simulation, **but** there is always room for improvement! Clouds that are *really* 3-D (not just *looking* that way), weather that *moves with the fronts*, and even higher-detail-scenery are all things that knock a CPU down, so are not implemented yet but will be as computer ability allows.

The world drives the sim. The computer tells us how far we can go. We can go farther every year.

FSW: Your product has built-in tools for parts, planes and scenery. Personally, are you equally interested in all of these tools or does one area have more weight?

AM: I use them all, but you do not have to. X-Plane comes with 40 planes and you can download hundreds more off the net, so all you *need* is X-Plane (the flight sim). But if you want to design

planes or scenery, then use Plane-Maker or World-Maker... whatever floats your boat.

FSW: You recently lowered the price of X-Plane. I think this is a great way to expand your market. Was this one of your objectives with the price decrease?

AM: Yes. That and I got tired of getting emails saying "Well it's really nice but it's SOOOO expensive....". Eventually I just "said uncle".

FSW: We've seen only a few add-ons for X-Plane e.g. Wilco. Would you like to see more 3rd party support? What do you think can be done to garner more interest by 3rd party developers?

AM: 3rd party-support comes from a large number of users, which X-Plane has not had at a price-point of \$249.00... but with the price at only \$79.00 now, sales have gone up by about a factor of 10, and the add-ons will go up proportionately. There are tons of third-party web pages for X-Plane (check some of them out, linked from www.X-Plane.com) and more will continue.

FSW: You have repeatedly stated that you are essentially a one-man show. While this allows you to go in a direction that is personally rewarding, does this leave some of the areas undone that your current users are yearning for?

AM: Sort of. While it is true that I am a one-man show, I still do more than the sims that have whole teams of programmers. The feature-list and versatility of X-Plane surpass *any* other sim out there, and most every feature that is in the sim has been requested by a user. Bottom line again; people ask for something, and I put it in if feasible. In X-Plane, you can have space-planes on Mars, F-4 Phantoms on aircraft carriers,

V-22 Ospreys out of dirt strips, gliders over mountains after getting towed to altitude, and countless other scenarios. Every one of them has requested by a user and then added by me. Thus, the features list that dwarfs any other sim.

FSW: Can you give us a short synopsis of your background as an aeronautical engineer?

AM: Bachelors Degree Aerospace Engineering. Iowa State University. Grade-Point Average 3.02 out of 4. I worked at DuPont Aerospace on projects I cannot discuss, but working under the man who founded the idea of the National Aerospace Plane. (Tony DuPont)

FSW: In two years, what exciting new features can we expect to see in X-Plane?

AM: See the features above that are not currently feasible with today's CPU's, plus anything else anyone asks for that is feasible, realistic, and at least somewhat marketable.

FSW: Thanks for your time. There are many flight simmers who will be waiting for these new features.

You can find out more about X-Plane from the official website at: www.x-plane.com/



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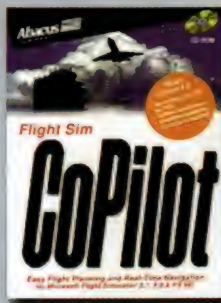
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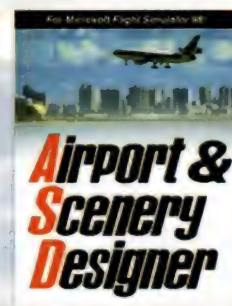
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\$39.95 US

Douglas R4D-6 NATS DC 3

As I mentioned in our previous issue, the third party development market for FS 2000 has begun to blossom. Since FS 2000 was released last fall, the flow of new add-on aircraft and scenery has increased from a mere trickle to the steady stream we're now beginning to see. It has taken a little while for the developers to catch up with the new technology and features, so the delay is understandable.

However, I think the most interesting aspect of this new generation of flight simulator add-ons is the increased attention to detail and realism incorporated in the new aircraft releases. We're seeing new planes for general, commercial and military aviation that represent an exponential improvement in visual models, functionality and overall realism.

The experience and skills of the good people that have been developing aircraft and panels for the Microsoft



The superb attention to detail in the aircraft model can be seen in the construction of the gear struts.

Custom Aircraft and Panel For FS 2000

Reviewed by Tim Dickens



The R4D-6 NATS DC 3 parked (above) and climbing (below).



Flight Simulator hobby over the years keep getting better as time goes on. Nevertheless, it seems that with the new possibilities for aircraft modeling and texture rendering found in FS 2000; developers have started to get *extremely* serious about realism and functionality. That "curve" has advanced from a steady upward slope, to a vertical climb that is going right off the old chart.

The new Douglas R4D-6 NATS DC 3 from Roy Chaffin, Bill Rambow

and Jan Visser is a perfect representation of this "new breed" of third party aircraft. I have to admit that when I first saw the Internet screen shots of this plane prior to its June release, I was skeptical. My first reaction was "oh come-on, those have to be real-world photographs or touched up FS screenshots." I was proven wrong when I downloaded the package and took my first look around. Here's a close look at what I found.

Installation

Installation is accomplished by downloading three files from the author's Internet site, then executing the

self-extracting Zip files and pointing them to the right directory. If there is a weak point of this package, this is probably it. You need to be careful to download *all* files and install them into the correct path to FS 2000. Not that this is a big problem, as this should be simple enough but in my experience with releasing flight simulator add-ons, this always leads to installation mistakes.

It would be much better to combine the package for download, but complete file and accomplish installation with either an InstallShield or maybe a self-extracting zip. There were several reported "problems" on the Internet forums about this package, which were mostly due to improper installation (like not downloading all the files). Nevertheless, this is a minor gripe. You should have no problems if you do download all the files and make certain to direct the Zip file to the proper directory. Make sure you download the two software files: wjrdc3v4a.zip and wjrdc3v4b.zip. Then make sure to get the patch (r4dv4pa2.exe). These three files will have you up and running.

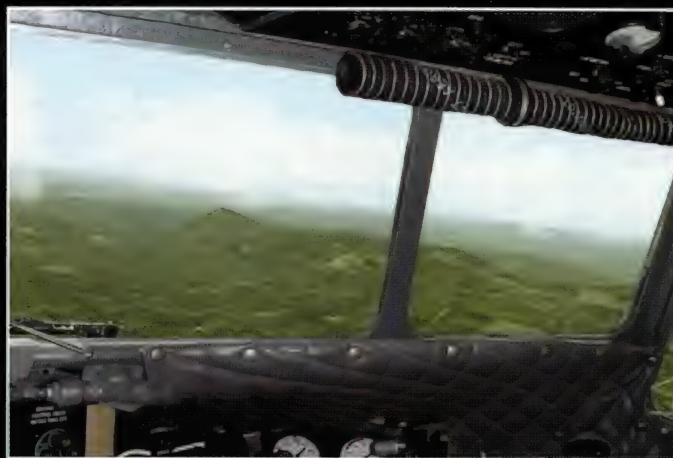
Documentation

The zip file will extract a very large and extensive HTML manual on this aircraft and panel into a new folder called "V4 Manual" in your FS 2000 root directory. It would have been better if it would have installed this into the same directory structure as the new aircraft, or given the new folder a more logical name, as I had a bit of trouble finding it the first time around.

The manual itself is *very* extensive, and further illustrates the heightened attention to detail in this "new breed" of flight simulator add-ons. I hope the other third party freeware and commercial developers are paying attention. This is one aspect often lacking in add-on software.

Of course, the usefulness of the documentation is in direct relation to the extent to which it is read. I can speak from experience again that many problems people have when using new add-ons comes from either not reading the documentation thoroughly or not reading it at all. This is definitely the case with this specific package, as I have seen quite a few "bug reports" for the R4D-6 on various Internet forums that are clearly spelled out as known limitations in the manual.

The panel switches, startup sequence and many other operational characteristics of this aircraft are executed in a very authentic way, which required some programming effort on the part of the authors. Therefore, I cannot emphasize too much how important it is to read this manual. It will save you some time and enhance your enjoyment, if for no other reason that it will illustrate the attention to detail they put into this plane!



The interior panel views of the R4D-6 NATS DC 3 are simply spectacular. From top to bottom, view at 4 o'clock, rear and 2 o'clock.

The Aircraft Visual Model

There were no shortcuts taken in this rendition of the DC 3. A great deal of attention to detail was taken in the creation of the visual model of this plane. This package, from the minute detail of the gear struts to the translucent windows, unquestionably sets a standard for others to follow. FS 2000 affords a great deal of flexibility to the state-of-the-art aircraft designer, and the R4D-6 team took advantage of a lot of this new technology. This is not just limited to the number of parts assigned to the visual model, as can be seen in the detail of the gear struts, but also to some "extras." An example is the passenger door that is open when the engines are off and then closes after startup.

Of course, the more complex the plumbing, the easier it is to stop up the drain. In this case, the passenger door has a tendency to want to pop open again in flight when the throttles are all the way forward. This is more of an FS 2000 limitation than a "bug," as it is spelled out in the manual as a known limitation. The simulator simply has some difficulty determining the state of the aircraft consistently. The more the design world pushes the envelope, the more you may see "quirky" things.

The aircraft texturing, although perhaps a bit "fuzzy" in some respects, shows the same painstaking attention to detail. One could argue the benefits and drawbacks of rendering textures with sharp detail or anti-aliased (fuzzy) aspects. Either has certain advantages and disadvantages. What is important is the totality of the visual presentation and this visual model does not take a back seat to anything else available. The choice of colors, color blending and those little shading/imperfections show a consistent attention to detail and realism. This is not an "acrylic" looking model.

Flight Dynamics

The only way to preface this is to say that the flight model of this DC 3 is absolutely outstanding. I say this based on my experience (I have flown many FS aircraft over the years) and on my familiarity with the DC 3. This familiarity is mostly from my father flying the C-47 (the Army Air Corps version of the DC 3) in WW II. So I have heard a lot of "DC 3 stories," complete with anecdotes about landing the "Gooney Bird" on short fields (like 800 feet), flying under bridges and other tales that were sometimes exaggerated just a bit. So having gleaned a certain amount of knowledge this way, and by grilling my dad on specific questions on its flight characteristics when evaluating various FS renditions of this plane, I have a good idea on how this beast is supposed to fly.

Therefore, I decided to make my first flight from Palermo, Sicily, to Brendisi - my dad's old stomping grounds during his service in the war. I put this Gooney Bird through every fit and tribulation I could think of, and I simply could not



The R4D-6 panel (top) shows even more attention to detail, using the very best technology available, including spectacular night lighting effects (bottom).

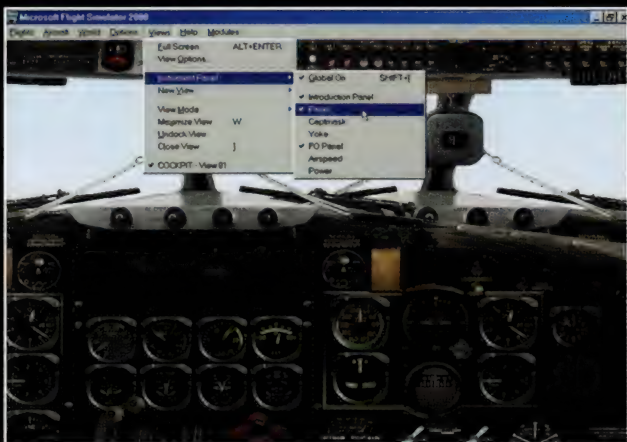
find any fault. Naturally, there are still some limitations to FS 2000 with respect to flight modeling. Like what happens when you lose one engine, etc. The R4D-6 simply performed brilliantly both under normal flying conditions and when flying "under stress." The performance at specific operational speeds, landing/takeoff distance and stall/clean stall speeds seemed just right. (But of course, if you believe my dad, you can land this thing on my driveway!)

The Instrument Panel

As good as all of the other aspects of this aircraft are, the panel is the high point. I have made several panels and gauges, and must say that this is a wonderful piece of work.



The visual model includes nice extras, like a passenger door that opens and closes (above). If you want to change to the first officer's panel in mid flight, you must also shut off the main panel, otherwise both will be visible (below).



The R4D-6 panel may be the first "photoreal" panel I have seen that passes muster. I have not been a fan of photoreal panels in the past. By *photoreal*, I mean using actual photographs as the basis for creating bitmap textures. Typically, in my opinion, photoreal panel means mushy with tiny (unreadable) gauges. The success of this panel is due in no small part to the photographic expertise of the design team. If you have a good photograph, taken under the correct lighting conditions and from the proper perspective, you can certainly use it for creating a top quality panel. This one proves it, so from now on I won't necessarily cringe when I hear "photoreal panel."

The panel file comes complete with a main instrument panel from the pilot's perspective or you can choose to fly from the first officer's seat. This choice is made when

the aircraft is selected from an initial menu that appears before the panel loads. Those with slow systems (500 MHz or less) may find that it takes a while to load this panel before the menu appears. Based on the detailed bitmaps used, and all the gauges that must load for this plane, I don't think this can be avoided. I don't know how keen I am on having a menu come up before the panel loads, since I am one of those "jump into the seat and fly" kind of guys. However, since you have a choice of two basic panel perspectives here, which is great, I guess there is probably no way around this.

However, as a reward for my patience, the selected panel immediately loads. It's followed by an excellent touch: the sound of the cabin door closing behind me! The only drawback to providing a cockpit for both the pilot and copilot is that if you change your mind in mid-flight and switch seats, you'll see a fragment of the pilot's panel underneath the copilot's. So, you have to go to the FS menu and shut off the main panel. Not a big deal though, and worth it for having the choice of seats.

One cannot talk about this panel without pointing out the quality and workmanship Roy Chaffin put into the gauges themselves. All custom gauges, obviously based on high quality photographs, include some functions not found in the standard Panels SDK format from Microsoft. Roy did some top notch C++ programming on these gauges, and a few are definitely over my head when it comes to gauge programming. There are verbal callouts when the gear is retracted and many other admirable extras. Many of the gauges are certainly programmed with standard SDK functions, but it is not very often that you see somebody put as much work into their visual aspects and functionality.

The night illumination effects Roy uses are simply outstanding. He didn't rely on the standard pink backlighting generally used in FS 2000 gauges. There are even two autopilot gauges. A convention type FS 2000 autopilot, for ease of use, and an accurate rendition of the Sperry autopilot system that you would find in most real DC 3 aircraft. The Sperry autopilot even includes its own help file, for those who want to take the time to learn how the real thing works.

Perhaps the most impressive use of photography for panel bitmaps I have ever seen is demonstrated in the interior views for the R4D-6. These are the most realistic interior views you'll ever find. Most of the interior aircraft bitmaps I have seen, including those of the default FS 2000 aircraft, leave me with an "umm...OK" feeling as I cycle through the views. However, these interior views make me feel like I am sitting in the cabin of a DC 3. This unquestionably sets the standard for how to create interior aircraft views.

Aircraft Sounds

The sounds, particularly those of the engines, are quite convincing. Perhaps not as "just plain obnoxious" as the experience of actually flying in a DC 3, but are quite a bit superior to the default FS 2000 prop aircraft sounds. From my own experience in the few flights I have taken in an actual DC 3, I can tell you that the number one thing you'll remember is that of the vibration. My dad claims that you could mix paint by putting the can right behind the throttle

pedestal and making a quick circuit around the airfield. I'm not sure about that, but I do know that it is not a "smooth" flying experience, like flying in a modern jetliner. Of course, you cannot simulate this vibration on the PC, but the associated semi-obnoxious environment afforded by the R4D-6 sounds is quite an effective substitute.

Conclusion

The R4D-6 NATS DC 3 is without question the most outstanding single aircraft add-on for FS 2000 to date. All aspects of the package, including visual models, flight model, panel and sounds are all top drawer. In many respects, new standards have been set, particularly in the panel and gauge departments. I like several things in this package.

What's not to like? Only the nit-picky little things I occasionally mentioned. Nothing that is worthy of being considered an objection. You know I had to nit-pick about something!

Will we be seeing lots and lots of freeware and commercial packages duplicating or exceeding this level of quality? To be quite honest, I tend to doubt it. I say this as a realist and not as a cynic. I think that the quality, care and technology that went into this package can be reproduced but keep in mind that this project is the result of many, many months of hard

and painstaking work on the part of three developers. Furthermore, this is the fourth version of this package. If we were to judge this as being the absolute "yardstick" for any future add-ons we will put on our hard drives, I think we would find ourselves without many more planes. Not enough people have the ability and willingness to do this type of work to produce enough quantity to meet the demand. This is an awful lot of work to put into one aircraft.

But I think what will be a result of this kind of "mega project" is that a lot of developers will be putting much more effort into their projects to try and meet (or exceed) what you see in the R4D-6. The trend in quality and realism in FS add-ons is upward. At the very least, this package will inspire others to put much more into their work.

My recommendation is that you run, don't walk to the Internet link below and download this aircraft, if you don't already have it. You will not be disappointed!

File Box

Authors:

Bill Rambow, Roy Chaffin, Jan Visser

Download/Information:

www.roychaffin.com/rcs-panels.html

About the R4D-6 NATS

The US Navy R4D-6 is a Flight Simulator 2000 replica of the actual aircraft owned and operated by the Mid Atlantic Air Museum (MAAM). The museum is located at Reading Pennsylvania's Regional Airport (Carl A. Spaatz Field - KRDG). The Museum's collection includes award-winning warbirds, classic airliners, rare & unusual military and civilian aircraft and historic exhibits

R4D-6 NATS (Naval Air Transport) is the Navy designation for the C-47, the military version of the DC-3. The MAAM Gooney Bird won the Best Transport award at the big 1982 EAA Oshkosh Fly-In, the Grand Champion Warbird the following year, and then Best Transport again in 1990 at the Sun 'N Fun.

The R4D-6 NATS software package can best be described as "Donation-ware." The development team is offering this package for free, and ask you to make a donation in appreciation of the software to the Mid Atlantic Air Museum (MAAM). The R4D-6 is presently not flying, as it is badly in need of a new engine. There is no obligation, but the developers would very much appreciate it if you sent a small donation of \$5.00, \$10.00, or even a larger one if you wish, to MAAM as a thank you for the freeware package.

You can find information about MAAM on the Internet at <http://maam.org>



Private Pilot

I like all types of airplanes, but have always had a definite affinity for the small general aviation (GA) aircraft. This is why, as a 9-year old, I used to haunt the Westchester County airport and easily made friends with the "grown-ups." I usually ended up doing local flights in small aircraft. I became involved in a club when I was 20 that rehabilitated small GA and military

aircraft, and had fun flying in the club's Cessna 172. At age 40, I still drool when I see a small aircraft. Don't ask why...it's all very Freudian.

Of course, I am not the only "I love flying small aircraft" freak this side of the Milky Way. Several other flight sim enthusiasts yearn for something less "heavy," and are badly in need of new blood. I have reviewed many commercial FS aircraft add-ons over the years and most of the few GA aircraft I have looked at were not of a high enough quality to even warrant close examination. So, the GA enthusiast who doesn't have access to the

Internet has been stuck over the years flying the FS default Cessna.

Last February, I discovered that Abacus was soon to release some nice GA planes. I showed great enthusiasm and anticipation when I learned that several of the top designers in the flight sim community were involved in the project. Unlike other aircraft/panel designers, I know that these folks have no bloated ego problems, and their past works in either shareware, freeware or commercial releases have always been impeccable in quality. After all, the end user is the customer, and they're entitled to their money's worth. **Private Pilot** is the new Abacus title, and here is what is in store for you.

Installation

Installation of the aircraft is done automatically; files are copied into the proper folders. After the initial installation, you'll need to install additional scenery by clicking on the scenery icon. The installation program also brings up a screen with several additional options.

Phil Paschutine is an independent writer and reviewer. *Flight Simulator World* is published by Abacus, also the publisher of Private Pilot.

Tim Dickens, Managing Editor of *Flight Simulator World* was heavily involved in the development of Private Pilot.

Two examples of aircraft in Private Pilot are the Piper Malibu (top) and the Pilatus PC-12 (bottom).





Beautifully rendered and detailed panels (Cessna310, top; Bonanza v35a, center; Baron58a, bottom)

The **Checklist** installation lets you see the checklists, in text format, for all the aircraft included in Private Pilot. They list the procedures every pilot uses before, during and after a flight to ensure a safe trip. In addition to listing the required tasks, these checklists also show the keystrokes necessary for accomplishing the procedures in Flight Simulator. They're loaded in WordPad and I recommend that you print them. They can also be called from within the Flight Simulator menu in the usual manner.

Each checklist includes the following procedures:

- Before starting engine
- Engine starting
- Before taxi
- Taxi
- Before Takeoff
- Takeoff
- Climb (Best rate and Best angle)
- Cruise
- Fuel Tank selection
- Descent
- Approach and landing
- Landing
- Taxi after landing
- Shutdown
- Securing aircraft

V-Speeds are not forgotten and this rates high in my book. Each aircraft has its own V-speeds information. No more guessing about the V_f , V_{ne} or other critical numbers. Many aircraft add-ons do not include this very important data.

Pilot-Tools is a wind correction and unit conversion calculator written by Louis Sinclair, author of FS Design Studio. It includes a window that allows unit conversion factors for wind, among other items.

The **Virtual E6-B** is an electronic rendition of the slide graphic E6-B Flight computer, commonly used in aviation. It's handy for solving ground speed, time and speed computation, finding headings, density/pressure altitudes, and units of conversion and distance. And let's not forget fuel consumption, fuel burned, TAS, time and distance to a VOR station, true altitude, finding unknown winds, finding altitude for most favorable winds, radius of action, etc.

Finally, Private Pilot includes four software demos:

- **Pilot Morse** tutor V 1.03 to learn or hone your Morse code technique.
- A **VFR Flight Planner** form in PDF format
- A demonstration of **Simplates 2000 US and World Edition**, which I highly recommend. Dauntless Software provides good quality program for both real and virtual pilots at dirt-cheap prices.

- ➔ A demonstration of the **Gleim FAA Test Preparation**. It includes demos of charts, figures and study outlines for the FAA Pilot certification exam.

Finally, an unexpected bonus **scenery package**, devised by Project Manager Jim Rhoads, is a unique, simple and effective training center. The training center is a fictitious, but beautifully constructed island about 40 miles northeast of Chicago. This is where you can test your skill landing and taking off on runways of various lengths by clearing a 50-ft obstacle. The other part of the scenery is an ingeniously arranged circuit, with various obstacles you must deal with, that demand good flying skills. A nice way to refresh your skills on those steep and around-a-point turn procedures. I have flown the circuit and it can be done!

Documentation

Private Pilots ships with a 120-page manual. The manual is divided into 3 main sections:

- ➔ **Flight School** teaches you the four principles of flight, describes basic flight gauges and describes several V-speeds, including the anatomy of a stall and its remedy. There are also descriptions of various turn maneuvers (steep, around a point, "S" and lazy 8s), patterns and approach/landing procedures, and a section on how to recognize instrument/non instrument approach runways and lighting systems.
- ➔ The **General Aviation Aircraft** section gives you a short history of the aircraft and its specifications.
- ➔ The third and last part deals with **Checklists & procedures**.

A Chicago NOAA VFR TCA chart is also included with an introductory flight lesson certificate that will enable you to pay the discounted price of \$35 at any flight school participating in the "Be A Pilot" program. A nice way to cross the bridge from virtual to real flying!

The Aircraft

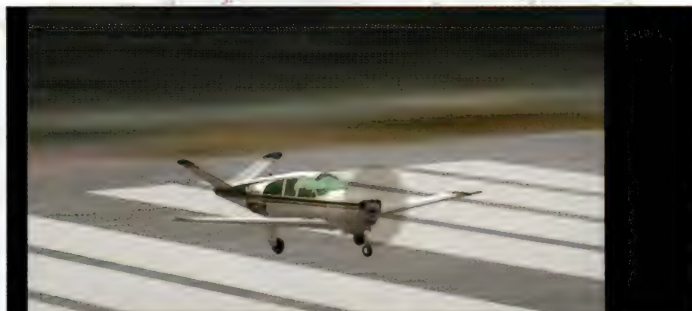
Private Pilot includes 13 aircraft: eight single engine piston props, one single engine turboprop, three twin engine piston props and one floatplane. All aircraft have 3-D animated gear flaps and propeller(s) but this is a standard feature today. The visual model for each of these planes is absolutely outstanding!

The real innovation is the pilot's view of the outside. I'm no aircraft designer so don't ask me how this was done. All I know is that I was able to see the runway in front of me and did not need to use the **(Shift) + (Enter)** key combination to lower the pilots point of view, as is the case with the majority of the instruments panels I have seen (FS default).

The virtual cockpits are there but I fail to see what people see in them. Either you fly in the cockpit or you don't and are missing a lot of the enjoyment. Unlike what we had in FS 98, the virtual cockpits in FS 2000 don't seem to make a good combination due to



Other examples of aircraft you'll find in Private Pilot include the Aerostar 700 (top), Hamilton Stoddard Glasair III (center) and Beech Baron 58 Twin (bottom)



The Beech Bonanza V-35 "V Tail" (top, above) and Cessna 310 Twin (above)

Z buffer management. The only thing really missing from these cockpits are the interior view bitmaps, as seen in the default FS 2000 aircraft.

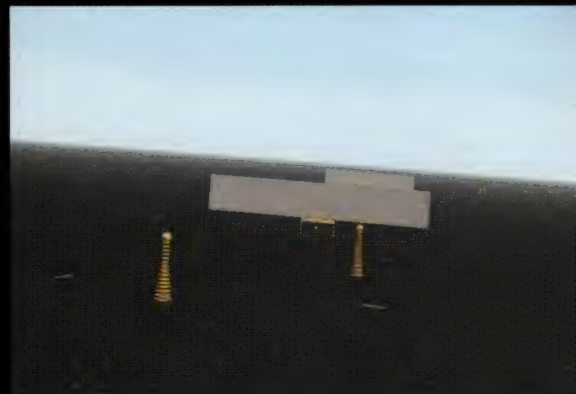
Each aircraft includes its own custom instrument panel. Eleven will display the FS default GPS, avionics stack or you can view an additional custom gauge panel by clicking on the appropriate icons. On aircraft like the Baron 58B, the engine gauge quadrant can be enlarged with a mouse click. The enlarged engine gauges are nice features when you need to adjust RPMs or read critical information. Isn't flying all about reading and interpreting gauge information?

Each aircraft can be manually trimmed to perfection except for the Baron 58 and the Glasair III, which must be trimmed with the VS function of the autopilot, unless you like bobbing up and down. I found that maneuverability in flight or on the ground was excellent. The Glasair III is quick to react when you apply full power and has a nasty tendency to sink when you throttle down. However, I was told that this is how the real aircraft flies.

Of course, to enjoy Private Pilot (or any other aircraft/panel add-on) fully you need at least a 19-inch monitor. I have talked with several flight simmers and aircraft/panel designers and 90% said they used a 20-inch or larger monitor. There is no tab function in FS 2000 permitting you to switch to an additional panel, so all gauges are crammed into the same screen and are best seen at high resolutions. I thought some of the markings were slightly fuzzy on a 20-inch monitor, and I only knew what the gauge was out of habit.

I am nitpicking, but as a reviewer, I have to point out what seems to me like a problem in the choice of the display font. When I tested the panels on a 20-inch at a retail store, I asked customers to take a real good look at the cockpits and awaited their verdict. None of them thought the slightly fuzzy lettering to be a problem, and all were very impressed. They only asked, "when is this software available?"

Scenes from the Private Pilot Training Center bonus scenery



Conclusion

Private Pilot is the first true commercially available GA aircraft add-on that will make all small aircraft lovers happy. The "heavy iron" virtual pilot will love getting away from the automated environment of the big jets and do some real hand flying.

The pilot's view, the excellent flyability, the comprehensive documentation and the companion add-ons make Private Pilot an attractive title that will provide hours of fun.



Other examples of aircraft in Private Pilot include the Diamond Katana DA 20 CI (left) and Mooney M20R Ovation (right).



File Box

Publisher: Abacus

5370 52nd Street SE

Grand Rapids, MI 49512

Internet www.abacuspublisher.com

(800)-451-4319

Suggested retail price: \$39.95

Authors: Terry Hill, Jim Rhoads, Tim Dickens, Chris Arrington, Chuck Dome and Scott Nix

F/A-18E Super Hornet

Like the F-22 Raptor and F-16 before it, the F/A-18E Super Hornet is getting its share of popularity lately among combat simulation enthusiasts. Jane's F/A-18 was first, but Digital Integration's F/A-18E Super Hornet was known to be in development long before Jane's ever announced F/A-18.

A Look At The F/A-18 Simulator from Digital Integration

Reviewed by Rod White

Digital Integration (DI), the developer of Super Hornet, is also the development house responsible for such classic simulations as Tornado, Apache (released as Apache Longbow in the UK), Hind and iF-16 (released as F-16 Fighting Falcon in the UK). Therefore, DI is no stranger to combat flight



A gorgeously detailed F/A-18E Super Hornet during training exercises



simulation. This UK development house has been creating combat simulations almost longer than any other developer out there today.

Actually, we're told that F/A-18E Super Hornet is fully licensed with the U.S. Navy, as they are using it as an official recruitment tool! In a day and age when video gaming in the home is as common as having a microwave and cable TV, the U.S. Navy just might attract its share of would be Top Gun pilots with F/A-18E Super Hornet.

The introduction for the simulation is an eye opener indeed. The production quality of the introduction is very high, but is also very long. It's so long that some players might not want to sit through it all. However, those that do will agree that it is very impressive.

Documentation

Let's start with what you get in the box. You'll find a CD-ROM, a 236 page manual, the 13 page "Pilot's Notes" booklet, and the keyboard controls layout card. The manual is laid out nicely, and offers a good amount of detail. Overall it is a very helpful aid. The manual features ten chapters, a glossary, abbreviations, and an index. Carrier landing tutorials, an in-depth tutorial on how to use the avionics and other cockpit functions and Carrier Ops are also explained in detail.

Program Configuration

The "Config Super Hornet" interface is worth mentioning, as it features a total of 12 different difficulty levels to choose from! In addition, you can choose from several configuration options:

- ➔ The *General* tab features the ability to turn on/off G-forces, the Mission Planner, the full motion video playback mode, and 1-12 different difficulty levels using a slider.
- ➔ The *Avionics* tab allows you to choose from 10 different checkboxes, with options like "Display Enemies on Radar", "Auto Radar Activation when weight is off wheels", "Enable Extended Talk Down for Carrier Landings" and "Enable Assisted Landings" just to name a few.
- ➔ *Virtual Cockpit* tab is where you select which features are present in the cockpit, but I can't see why anyone would want to turn off the compass, the HUD and other vital cockpit functions.
- ➔ The *Visual Detail* tab offers 15 different checkboxes, all to help fine tune the detail level offered in the simulator, with options for "Hi-res MAV Image", "Hi-Res FLIR Image", "Missile Trails", "Weather Effects" and so on.
- ➔ The *Display* tab allows you to select your video driver, resolution, "Gamma Level", "Micro-Texture Detail" and "Visual Range" in nautical miles.
- ➔ The *Model Detail* tab features options for the overall detail of the objects, with a slider to adjust the distance at which the levels of detail for the models change.



What a pretty bird she is indeed! (top); The Quick Start interface menu (center); Taking off from the USS Ronald Reagan (bottom).

- The *Sound* tab features sliders to adjust the sound effects, music and speech. There are also check boxes for "3-D Sound," "Enable Master Caution Tones" and "Enable Lock Warning Tones."
- Finally the *Controllers* tab allows you to check boxes for "Joystick," "Throttle," "Dual Throttle" and "Rudder."

Action Modes

Once you have setup the simulation to your liking you can now jump into the action. Modes of play include "Training," "Combat," and "Quick Start."

Under the *Training* option, you'll find a set of missions divided into four categories: Aircraft Handling, Air-to-Air Weapons Practice, Air-to-Ground Practice and Special Equipment Practice. During these missions, infinite weapons and invulnerability are in effect, which is a great option, as no one wants to run out of missiles and life while training anyhow. Everything is covered in the training missions, as you will take off and land in all types of weather, at any time of the day or night. Other lessons include navigation, night flying and formation flying. However, I'm sad to report that voiceovers with a virtual instructor are not present, which is a feature that would have helped a great deal for greenhorn simulation pilots.

Quick Start, as the name implies, gets you in the air and in the middle of the action quickly. Once you enter Quick Start the option of Air-to-Air or Ground Attack is offered, each in either the Barents Sea or Indian Ocean theaters of operation. The option of invincibility in Quick Start is also offered, which essentially allows you to choose the type of weather (clear, light cloud, patchy cloud, broken cloud, rain, snow, heavy rain, storm and blizzard), and the time of day (dusk, dawn, day and night). In this mode of play a mission briefing and debriefing are both MIA (Missing In Action), as points are just awarded and assessed for your performance. At the end of the missions, if you do well enough, you may then find your score listed on the tally board in the main Quick Start menu.

The *Combat Missions* consist of Air-to-air, Anti-shipping, Air-to-ground, Air defense, Reconnaissance and Strategic attack mission scenarios, where the Quick Start section essentially only covers four of the six different mission types.

In the past DI has been known to offer a superb mission planner, and Super Hornet follows that tradition by featuring a very in-depth mission planner too, allowing for very in-depth preflight planning. Waypoints can be moved around and added, plus you'll find in-depth Intel and even meteorological information at your fingertips.

The mission planner is great in Super Hornet. However, one glitch will no doubt annoy many simulation enthusiasts. The mission planner is great, but you can't modify one planes' weapons loadout with affecting the weapons loadout of the entire flight. So if your flight has multiple objectives to accomplish, you may indeed



Another one bites the dust! (top); Some very unfortunate enemy ground units (center); Detailed of ground objects (bottom).



The superb Mission Planner interface (left); Every button, dial and knob is operational via your mouse cursor (middle); A decent variety of mission types from which to choose (right).

mess up the chances of completing them if you load up your plane for Air-to-Air, when indeed another plane or two need be outfitted for ground pounding as well.

Overall, Super Hornet features about 40 single missions, and, unfortunately, there's no true campaign scenario. But there are two different regions where the action takes place. In both regions the enemy is, of course, Russian. In most cases having no true campaign scenarios would mean the death of any simulation, but I'm glad to report that the missions, though scripted and having no affect on each other, are still a great deal of fun to take on.

Graphics

In the visuals department Super Hornet is a mixed bag. Super Hornet's visuals are handled by Direct-3-D, and resolutions of 640x480, 800x600 and 1024x768 are offered.

The terrain visuals have taken the most criticism. A variety of shades of greens and browns make up the ground texture tiles. Although at a high altitude it looks decent, down low it gets less appealing. Absent from the ground are a lot of little details we have grown used to seeing in other more recent combat simulations, like actual activity. Although they claim a ground war is waged, cities and battlefields are for the most part rare in Super Hornet.

On the plus side, the 3-D models are outstanding in Super Hornet. The plane you fly is painstakingly detailed; featuring lots of fully articulated surfaces and components. The enemy and allied planes all look good as well or the most part.

Once in the 2-D cockpit, most simulation enthusiasts will also agree that Super Hornet has Jane's F/A-18 easily beat in functionality. Every dial, knob and switch can be manipulated via the mouse, and from what we understand, each of these functions are not faked, as they all work as they would in the actual Super Hornet aircraft. Like Jane's F/A-18, a 3-D cockpit is also featured, but after seeing and getting used to the 2-D one, I just can't see why any virtual pilot would want to ever bother with it.

Additionally you will find a true to life carrier deck in Super Hornet, complete with crewmen on the deck! Yes indeed, they are not just for show either, as they are seen there doing their jobs, just as they would be on the deck of a real carrier. Each of the crewmen can be differentiated by the color of their jackets. The color of their jackets designates them as plane directors, catapult crewmen or landing-signal officers. Oddly enough DI also chose to model the USS Ronald Reagan as the home-base aircraft carrier, which is the same carrier modeled in Jane's F/A-18.

Other visual effects like explosions, smoke trails and debris are modeled well, but again if you're looking for more of the Hollywood-style special effects you may want to stick with Jane's F/A-18. On the other hand the visual effects of rain, snow, dusk and dawn are very well done.

Combat Realism

In this department, I feel that Super Hornet passes successfully, although some may question the flight modeling. But simulation enthusiasts must remember that the Super Hornet is a fairly complex, and very modernized combat fighter aircraft, which is much easier to fly than most other combat aircraft today. Having said that, the flight characteristics of the Super Hornet may at times be a little unbelievable. The big question is "Do I feel like I'm flying a Super Hornet"? Or "Is this what I think a Super Hornet should feel like"? I would respond yes to both questions. The avionics modeling is comprehensive, with a variety of weapons deployment methods simulated, and a large arsenal of Super Hornet weapons to deploy in combat. Additionally, the enemy AI aircraft are very good, as shaking a MiG is tough once one has you in his sights.

Tip: don't allow ANY planes to get behind you in this simulation!

Super Hornet does feature multiplayer capabilities for IPX and TCP/IP Network functionality, and it is limited to "deathmatch" encounters, but up to 24 people are supported over a LAN that way.

Conclusion

The question remains: Is Digital Integration's F/A-18E Super Hornet worth the price of admission? I think most combat simulation enthusiasts will find that Super Hornet is a very enjoyable combat simulation. Considering the pickings is getting slim, with fewer new combat simulations on the shelves today, Super Hornet is not a bad option if you already have Jane's F/A-18 and are looking for more of the same, only different.



The bad guys in F/A-18E Super Hornet

Digital Integration did make the promise that they would release a Gold version of Super Hornet later down the road. Actually, Super Hornet was released in the UK last November, long before it ever hit North American shores. So, if they're indeed still planning on releasing a Gold version, complete with the fully dynamic campaigns and mission editing capabilities that they had originally promised would be included with Super Hornet, then Super Hornet would surpass even Jane's F/A-18 as the top dog of Super Hornet combat simulations.

As it stands now, F/A-18E Super Hornet is a strong effort from Digital Integration. In short, it's a solid combat simulation. It actually does a better job at conveying carrier operations better than Jane's F/A-18 right out of the box, with a true to life deck filled with crewmen who are actually doing their jobs. The mission variety, highly detailed and fully functional 2-D cockpit, and great AI make Super Hornet a fine simulation of the F/A-18E. If you have enjoyed DI simulations in the past, you will no doubt find that Super Hornet is right up your alley.

File Box

Publisher: Digital Integration

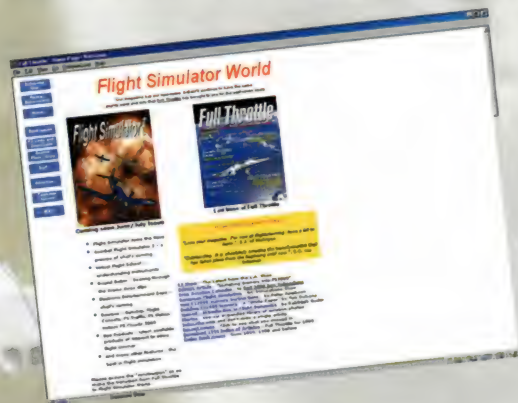
Internet: www.superhornet.com

Suggested retail price: \$49.99

Flight Simulator World On The Web

Check out the Flight Simulator World website (www.flightsimulatorworld.com). It's the perfect place to start for information on flight simulation and aviation. At the Flight Simulator World website you'll find:

- ✓ Special online articles
- ✓ Aviation photo library
- ✓ Tutorials for aircraft for aircraft, scenery & panels
- ✓ Complete index of Full Throttle articles
- ✓ Reports on shows and events
- ✓ Interviews
- ✓ Subscription information
- ✓ More!



www.flightsimulatorworld.com

Lauda 425

Do you like flying simulated airliners? Or flying with ATC? Do you like a challenge? If so, Papa Tango's new *Lauda 425* will keep you very busy with its breakthrough LiveATC adventure product!

I thought I'd seen it all in my 10 years of flight simulation. *Flight Simulator Flight Shop*, *ProFlight98*, *Radar Contact 99*, *RealATC*, and similar programs have provided various forms of ATC flying for Microsoft Flight Simulator. With these programs, users make a flight plan, the program builds an adventure, and ATC is tailored to match. Yet these adventures and their ATC can seem "canned," and you can only evaluate your flight performance by your own standards. Also, the adventure would stop working in some cases, and leave you "stranded."



Weinbacher tell you what to do. You need to do what the Captain and copilot Christian did on the real flight. You're graded on all flight parameters, including; taxi, flaps, take-off, climb, cruise, track, navaid/radio tuning, descent, approach and landing.

So, just one flight? Sounds simple and maybe not worth the price? Well, you have to trust me, as I was a beta tester for this program, which was written by veteran *RealATC* programmer Ralph Zimmerman. Doing exactly what the real pilots did, in the same sequence, is a challenge. You start with 100 points, and additional points are added for performing the correct operations at the right times. Points are subtracted for doing things incorrectly. Also, there are Austrian, Italian, and French accents as you listen to the recorded voices of the real controllers, as well as the voices of Daniela and Christian.

A Unique Live ATC Adventure Reviewed by Doug Horton

Of course, there is the whole world of SATCO ATC flying, which I write about in every issue of *Flight Simulator World*. SATCO is live and real-time, but the realism depends upon how many pilots and controllers are active online when you want to fly, and where these controllers and pilots are.

Lauda 425 is an entirely different ATC flying experience, and although there is just one flight, I think it's incredibly realistic. However, I think this one flight will keep you busy and learning for months. I say it's incredibly realistic because you retrace a real flight from Vienna, Austria (LOWW) to Nice, France (LFMN), which was flown by real pilots of Lauda airlines.

All cockpit and ATC communications were digitally recorded for this flight. Your role is to be the copilot (First Officer), while ATC and real pilot Captain Daniela

Installation

The installation has alternatives for FS 98 and FS 2000, which result in installation of different scenery, aircraft and panels. The cockpit and ATC recordings are common to both programs. Also, some users may have installed Papa Tango's *Fly Lauda* or *Austria Professional* programs and have enhanced scenery for Vienna airport, though the default scenery for Vienna and Nice are quite sufficient for FS 2000.

The installation of Lauda 425 also includes a remarkable Canadair Regional Jet model 100. The exterior is nicely painted and fully animated. The panels were designed by Phoenix Simulation Software, and they are slightly different for FS 98 and FS 2000. Both versions have an operating upper panel and throttle quadrant (pedestal). The FS 2000 version has an operating Flight Management Computer, along with a unique CRT navigation display. This display uses a type of vector graphics technology so the resolution is very fine, although the gauge itself is average size. With the FS 2000 version, you can also operate the FS 2000 default GPS display. Since your ability to perform the correct operations at the right times

The Lauda Canadair Regional Jet model 100 (top of the page) and a finely detailed instrument panel (right).



affects your score, it pays to read the manual, study the panel features, and learn how all displays and switches operate. The panel allows a detailed startup sequence, but you are not graded on this aspect of the flight.

Documentation

The manual has been furnished in the same three-ring notebook format used by Papa Tango for their recent releases, along with a plastic folder for holding the furnished enroute chart and CD-ROM. It includes checklists for the CRJ-100, a copy of the marked up flight plan used on the real flight, as well as all necessary charts, departure, and arrival procedures. The manual thoroughly describes the Lauda CRJ-100 aircraft panels and keystroke "mechanics" of the adventure, but could be slightly stronger in terms of how to get started and fly the adventure. *Hints:* 1. Since the adventure begins by your tuning to 121.60, you'll need to start the APU in order to have radio power. You start the engines when Captain Daniela tells you to. 2. Expect that ATC will sometimes divert you for traffic, military exercises, and send you "direct," so you may not use all waypoints and procedures provided in the charts. 3. You may have long periods during which you won't hear ATC communications or cockpit conversation. However, keep flying and trust that the adventure will come alive again.

Operation

How does it work? I'll describe operation for FS 2000. With FS 2000 running, select the Lauda 425 adventure. This will change your aircraft to the Lauda CRJ-100, load the Vienna airport scenery and initialize the adventure. Scrolling text will provide an introduction and you'll be directed to change to Ground Control on 121.6 to start the adventure. The only problem I had at this point was that the engines weren't started, so I had no avionics power. Therefore, my radio screen was blank. So, it's necessary to learn about the upper panel to start the APU. (You can use FS 2000's automatic startup with **[Ctrl] [E]** at this point, but it would not be realistic since the Captain has not told you to start the engines yet.) So, the greatest realism is achieved by reading the manual. Since the program also installs an FS 2000 flight plan, you can load this into the Honeywell FMC and your intended track will be displayed on the panel Navigation Display. Also, it will be available on the popup FS 2000 GPS moving map.



The overhead panel with startup controls (top); The radio tuning must be done on the lower console, not the main panel (bottom).

You'll want to follow the actual checklist to get everything going and the adventure will wait for you. After you're ready, dial 121.6 on COM1. You'll hear Captain Daniela and First Officer Christian reading the checklists. You'll also hear Vienna Ground. Although at this point you must do what they say, expect to learn as you go and expect that this won't be easy. For example, you must wait to taxi until you hear "hand signal received," or you lose points. I flew the adventure many

times in beta testing and it was always a challenge. You'll need to listen closely and follow instructions; otherwise, you lose points and the adventure may terminate if you become completely lost.

Fortunately, the adventure has many optional keystrokes you can use to help you learn how to fly the Lauda 425 flight. For example, you can have the adventure automatically tune communications so you'll always be tuned to the proper controller. This is handy because the radio tuning must be done on the lower console and not the main panel. You could alternatively have it automatically select navaid frequencies. There's also a keystroke option for "where am I?" Using these options reduces your score slightly, but it's worthwhile to get going and then improve your score as you learn the flight on successive tries. The adventure takes about two hours.

What is graded? You must do everything Captain Daniela told First Officer Christian to do on the real flight for aircraft systems and fly as directed by ATC. Remember the "aviate, navigate, communicate" guidelines for real pilots? In this case, you *aviate* and *navigate* as you listen to the flight crew and controllers *communicate*. You also get points for tuning NAV radios to appropriate navaids, even though you may be flying the track in the FMC or responding to course changes directed by ATC. You'll be graded on items like flaps and gear, climb and descent rates, being at the correct altitude, correct speed and maintaining the correct track. You're even graded on having the OBS set to the proper (logical) course for navigation or tracking navaids.

The manual explains how you can select random weather for a bonus, or you can use FS 2000's real weather importing feature to fly the flight with current weather. If you master the original daytime VMC, you can use keystrokes at the beginning of the flight to select IFR (+20%) and/or night (+10 points) conditions for a higher score. The runway at Nice will be assigned based on whether IFR is selected. Furthermore, press **Ctrl** + **S** to check your score throughout the flight without penalty. A few other options are included in the manual.

Conclusion

What's to like? If you are an airline flying realism enthusiast, almost everything! The program is unique among flight simulator add-ons, and it's a great challenge. Learning the CRJ-100 aircraft systems is the first challenge, and you need to listen carefully to hear what is required of you. There is significant variety in the actual track, and the approach to Nice is very challenging. It's a STAR, which uses intersections over the Mediterranean Sea. You approach Nice along the coastline, then turn seaward for the STAR waypoints. Toward the end of the STAR approach you'll be directed for a "short final" instead of what is shown on the Instrument Approach Plate, because limited visual conditions existed on the day of the real flight.

Confused by a word or term?

See the Talk the Talk section for an explanation of acronyms and words used in this article. See page 75

Am I giving too much away? No, the entire flight is a true challenge: a challenge to *aviate*, a challenge to *navigate* and a challenge to *communicate* by hearing what to do. What's the maximum possible score? Even the author doesn't have a number because so many variables are possible. It's in the hundreds, and you can report yours to Papa Tango for "fame and fortune."

What's not to like? Nothing about the adventure itself, just some items that fall into the category of "attention to detail." For example, the furnished enroute chart doesn't show all airways listed in the flight plan, and significantly, it does not show the key waypoint SOLNI listed in the real flight plan. This is key to flying the adventure correctly. To help you with this, you can estimate the position of SOLNI as between DETSA and MALUG on the included chart, west of the VIW VOR. Also, SOLNI will show up on the track in the Nav Display if you import the furnished flight plan into the FMC. (Again, you MUST read the manual.)

Not related to the program is the fact that there has been runway renumbering at Nice. The furnished Approach Plates show 4L and 4R, though FS 98 and FS 2000, as well as the audio refer to 5L and 5R numbering. The small window provided in the upper panel makes scrolling adventure text difficult to read during the short time it's displayed. Therefore, I highly recommend getting Peter Dowson's new adventure text module. It allows you to put the text line anywhere on the screen. Look for ADVDISP.ZIP at your favorite flightsim download site.

Users may get very frustrated with this program because it's not like any other flight simulator adventure add-on. It will take some time to learn the panel features. Also, you may need some "ear training" to understand the accents, so it's just not easy. However, that goes with the realism. Another frustration is that the adventure has trigger points, in terms of where you are and what you're doing, which are necessary with Microsoft's Adventure Programming Language. If you miss one of these points, it may cause a portion of the adventure to have a discontinuity. For example, one of the times I flew the adventure, I had no communications after crossing the ALBEGNA NDB and the turn from the coastline near Nice to GONTO was missing. Fortunately, I knew what to do from earlier tries, so I steered toward GONTO, and as I approached, the adventure dialog resumed, so I was back on

track. You need to press on, accept that is a new kind of simulation flying, and be prepared to fly the adventure many times. You'll improve over time, and that's the beauty of it, because you learn a great deal about the panel features, navigation, European geography, and ATC over three countries!

Although the price point may be high for flight simulator add-ons (\$47.99), I highly recommend buying and flying this unique adventure program. Papa Tango has raised the bar for ATC add-ons!

File Box

Publisher: Papa Tango

Internet: www.papatango.com

Suggested retail price: \$47.99

Precision Pilot

Reading books on instrument, navigation and IFR procedures can be quite rewarding for flight sim enthusiasts. However, you'll usually find that any one book contains few examples. Of course, you can always buy the complete "IFR Confuser" or "How to..." type of book. But you would still need one for navaid intercept, flying the ILS, NDB tracking, etc. Moreover, I'll bet your bank account disappear as your book collection grows big enough to compete with your local aeronautical bookstore.

Precision Pilot is an advanced navigation instrument trainer that is a simplified version of Radio and Navigation Tutor 2000 (RANT 2000) used by the RAF, British Aerospace and the Oxford Air Training School. Its author, Steve Oddy is ex-RAF and a civilian flight instructor and examiner.

Installation and Documentation

Installation is automated. Since Precision Pilot uses standard Rate 1 turns and computers vary, you'll need to calibrate the timer when you launch it for the first time. It is also recommended that you occasionally calibrate it again. Since the tutorials include all the necessary documentation there is no paper manual, and the help file only deals with the software settings and menus. The tutorial text is in both US-English and UK-English. This isn't a surprise considering some procedures are not executed the same on both sides of the Atlantic. Additional desktop wallpaper bitmaps are in the CD-ROM as well.

Navigation And Approach Trainer

Reviewed by Phil Paschutine



The Navigation Practice windows in Precision Pilot



The Work Environment

Because you use a mouse to control the aircraft, you won't find any joystick option in Precision Pilot. The objective is not flying but instead is concentrating on navigation and procedures.

The work environment consists of three distinct resizable windows:

The **Navigation** window displays your flight path and various map details that can be shown or hidden (waypoints, airways, DME, range/radials, etc.). Several icons appear at the top of this window that let you change the aircraft's location (in exercise mode only) and zoom in and out of the map. You can start/stop, restart simulation and accelerate time. You can record the simulation in both practice and exercise modes and playback the last recorded simulation. I wish Precision Pilot had included a way to recall recorded simulations, however. An adjustable wind velocity display can be toggled on/off and you'll use the digital or analog stopwatch often. As you become more confident, you can hide the aircraft, its track or both.

The bottom window holds the **Nav aids** boxes, which can be tuned with the arrows or by right clicking on a nav aid in the navigation window.

The **Compass** window shows the instruments you selected for Navigation Instruments (Nav Fits), such as the RMI, HSI, OBS, EFIS GPS, and ILS. A supplementary Auto Glideslope button will have your aircraft follow the glideslope automatically when you're tuned to an ILS, and approaching the glideslope from below. You can also switch needle slaving on the RMI between VOR1 and VOR2. There are several icons at the top of the Compass window to climb and descend (at the rate set in the performance section of the start details), to turn left or right at Rate 1 turns, and to return to level flight. The Altitude and Speed boxes let you type a value or use the arrow to change the current settings. The DME and marker box are located at the bottom of the Compass window.

The Compass window showing an HSI and the GPS.

Program Settings

Precision Pilot needs to load four files to function properly:

A **Map Database** with airport, waypoint, navigation and airway data. Current maps are for Florida, the U.K. and Germany. Additional files should be available for download in the future.

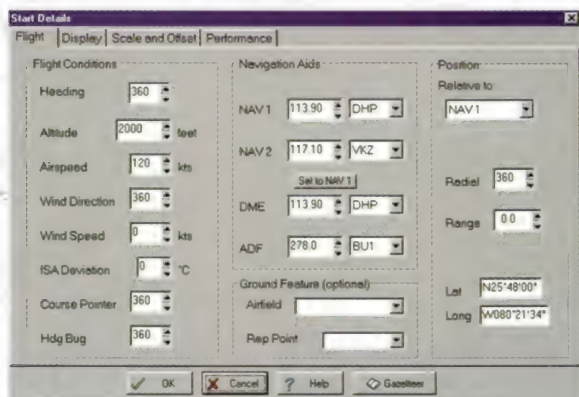
A **Procedure Library** file with data for a specific approach and landing, including position and instrument settings.

A **Start Details** file that you can edit.

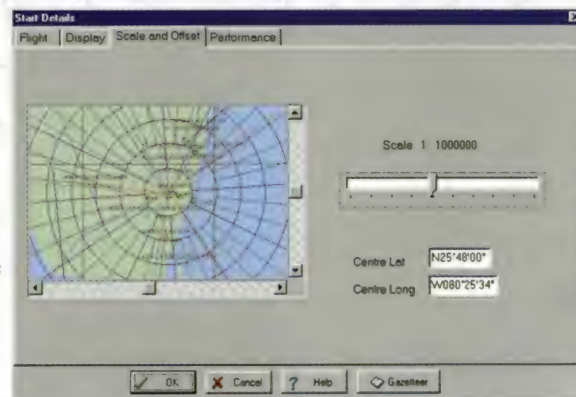
Navigation **Equipment** file where you may choose from three sets. When you first install the program, the default sets are "airways," "Basic" and "EFIS." You can also edit the Navigation Equipment file. You can load, edit and save files with your preferred navigation instruments or to match the ones in your real or virtual aircraft. I suggest that newbies first use the basic RMI, OBS/CDI before moving to the EFIS or GPS.

In the **Options** tab, choose various preferences, such as language. This is important because some things, such as holding procedures, vary from country to country. Precision Pilot uses either the UK English or US English texts.

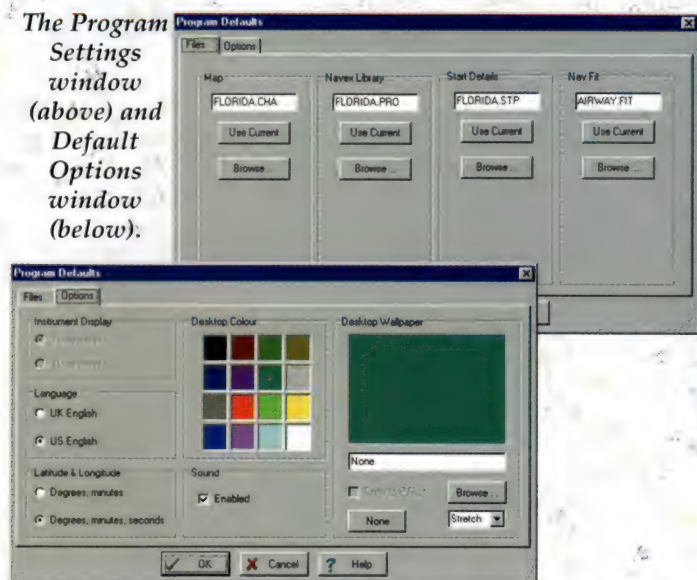
If you want to have three instruments in the Compass window you need to have a minimum 1024 x 768 screen resolution, otherwise the program can only show two and



The Map Scale window — 1:400000 scale seems to be the best place to start (right) and the Start Details Control Center — Flight, Nav and position settings are selected here (left).



The Program Settings window (above) and Default Options window (below).



you'll have to click on an instrument button to display it. You can choose your coordinates to show in either degrees-minutes or degrees-minutes-seconds formats.

Start Details Control Center

This is where you establish start parameters for a flight area. Additionally, some of the parameters you include are used in the tutorials and exercises so make sure not to include unrealistic values. You can create and modify as many Start Details files as you wish and later recall a file in the defaults.

There are five options in the Start Details Control Center:

Flight settings let you set your flight conditions, such as nav aids settings, aircraft true position (relative to NAV 1, NAV2, ADF), reporting point, airfield or latitude and longitude. Start Radial and range can be predetermined for any of the nav aids or from a reporting point.

Display is explicit. If you use the UK English language, you can set altimeter settings in QFE or QNH. The vertical reference QFE/QNH option does not show if you use the US English language.

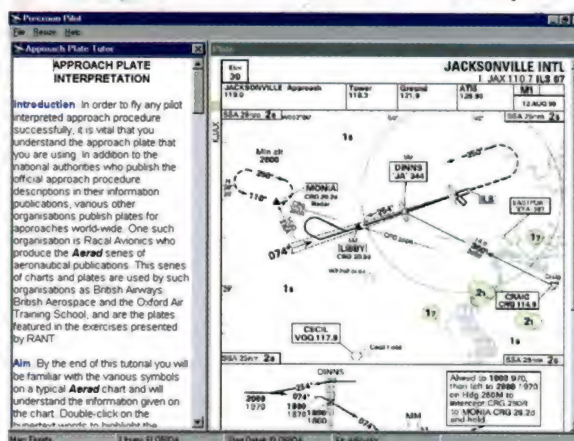
Scale and Offset are your map zoom settings, as they will show in the navigation window, in practice mode only. The map can be scaled from 1:200000 to 1:2000000, I found it best to start with a 1:400000 scale.

Performance lets you control your default airspeed, climb and descent rate settings. These can be adjusted to match your favorite aircraft flight characteristics. Turn options are either a three-degree per second turn or a maximum bank angle of 25° if you chose to have the flight characteristics of a public transport aircraft.

The **Gazetteer** is a search tool of the map database that will look up any information, like an airport, and display the available information. You may obtain additional information for the airfields, reporting points and airways by clicking on an element. So, for example, if you look up "Miami Intl" and click on "ILS/DME IVIN," that information shows in the ILS tab. In addition, the small map to the right centers on that element.

Tutorials

Many aspects of IFR navigation from describing the function of an instrument to teaching complicated IFR techniques are explained in the tutorials. The tutorials are interactive and some require that you double-click the underlined text to display an instrument and its elements or to toggle the HSI display modes. For other tutorials, such as the ILS procedure, you'll be asked to click on the action button. Once the action is performed, the text will advance to the next step of the procedure. Unless you're familiar with the subjects, my advice is to take each tutorial in the order they are listed.



The Tutorials menus provide lessons on many aspect of IFR navigation.

Exercises

These are split into three categories: Techniques, Procedures and Mental Dead Reckoning. The first six exercises are for Techniques. These are followed by three Procedures exercises and a fourth that combines the previous ones plus one for Mental dead reckoning.

The Radial Intercept exercise, for example, assumes you've followed the radial intercept tutorial and learned about anticipation, x-winds and drift corrections. When doing a Technique exercise, the first screen you'll see is the wind settings. The task to perform is listed at the top of the

navigation window. No exercises are similar because the program randomly selects a navigation beacon, an aircraft position and hold orientation.



The Exercises in Precision Pilot include Techniques, Procedures and Mental Dead Reckoning

Some of the Procedures exercises, such as Departure, Terminal Approaches and Combined, require using an aeronautical chart. At some point of the exercise, you'll need to switch from navigation mode to the aeronautical chart. You can combine a SID, a procedure and a terminal approach if you want.

The package includes one procedure for Florida, two for the UK and three for Germany. This may not seem like enough but then Precision Pilot is not a "flight" simulator. It's an interactive IFR tutorial and training simulator. Product

File Box

Publisher: Just Flight Ltd.
Units A2/A3 Edison Road
St. Ives
Cambridgeshire PE27 2LD
United Kingdom
Author: Steve Oddy
Internet www.justflight.com

Manager Alex Ford told me "if there is a call for more, then we may be able to produce them for the web site. The rationale behind Precision Pilot is that, once the basic techniques are learned, you go back to your Flight Simulator and fill your boots there."

Mental dead reckoning is done in questions. Each correct answer will earn you points. Otherwise, you'll hear a beep and the answer will be displayed with an explanation and its formula.

Conclusion

Precision Pilot covers many IFR techniques and procedures, and is meant for all real pilots in need of an IFR refresher or for all flight simmers who want to learn IFR and make the most out of their favorite simulator. It provides an interactive and graded tutorial system for pilots to learn the methodology of instrument-only navigation and skills. It's a good addition to the flight simulator enthusiast's resources.

Ever wonder why O'Hare International Airport is ORD?

When you fly to Chicago's O'Hare International Airport have you ever wondered what the ORD means on your airline baggage tag? Well, it comes from the airport's original name of Orchard Place.

O'Hare Field was originally government land and the location of a busy factory that produced the Douglass C-54, one of the largest U.S. aircraft used in World War II. Besides the factory, the area also included a network of runways comprising most of the military airport facility called Orchard Place.

In 1946, the City Council bought 1,080 acres of this property from the War Assets Administration. Because commercial aviation was growing so rapidly, another airport would clearly be needed in the near future. The plan was to build a second major airport facility in Chicago to complement

Chicago Municipal Airport (whose name was later changed to Midway Airport). At that time, the Chicago Municipal Airport was the world's busiest airport. The City Council authorized the sale of bonds to buy the land adjacent to the government property. In all, about 7,000 acres of land were acquired for the site of the new facility.

In June 1949, Orchard Place was renamed to honor Lt. Commander Edward H. "Butch" O'Hare from Chicago. He earned a Congressional Medal of Honor in 1942 for shooting down five enemy aircraft and crippling a sixth. He was sadly killed in 1943. A reminder of the airport's original name, however, remains in the ORD abbreviation.

Amsterdam 2000

Lago, Hansjoerg Mueller and Wilco have at least one thing in common: all designed Amsterdam Schipol airport whether as a standalone add-on or part of a scenery package. So I thought, "this must be a popular destination!" Let's look at the latest version of scenery for this airport, Lago's Amsterdam 2000.

Amsterdam 2000 is a "try before you buy" program, meaning that until you register you'll have to cope with traffic shown only for 30 minutes per session and the scenery being visible for 6

The 41-page manual deals with restrictions and procedures. You'll find two arrival and departure timetables in the appendix (54 departures and 54 arrivals from 0655 to 2140). They include time, destination, flight number, aircraft type, heading and runway. Schipol has a lot of traffic, and unless you want to endure a 300+ ton heavy landing on top of you or ramming you from behind, I recommend that you read the timetables.

(FSTraffic provides the dynamics), you'll need to refer to the gate assignment chart to know which gate is available.

Finding your way during the day is not a problem thanks to the many location and direction signs. Be on the lookout for traffic and look at the departure and arrival timetables to make sure you won't meet with a heavy while taxiing. I have not been able to verify this, but Lago claims that "Amsterdam Schipol 2000 mimics the movements on the airport in detail, including all departures and arrivals by KLM and its two partners Alitalia and Northwest Airlines flown on February 5th 2000." That is nearly 600 flights so Amsterdam Schipol is quite a busy airport.

You may notice that trees are flat. This isn't the best way to construct 3-D trees and was a bit of a disappointment.

The Scenery

Schipol is the first commercial add-on to include most of the airport buildings and roads that are all done in 3-D — right down to the road and highway signs. The airport looks quite busy from



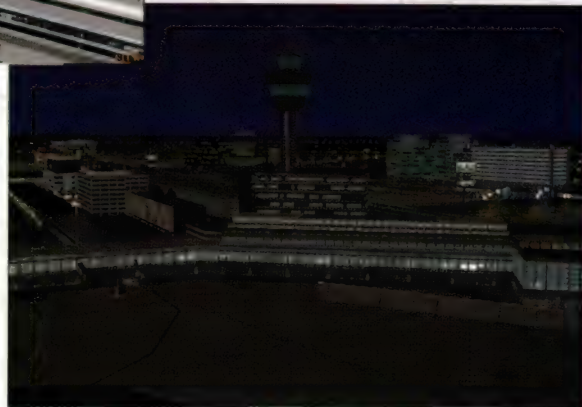
minutes at a time. You can only currently buy this scenery add-on online. The two files to download are one for the scenery and one for the charts and documentation.

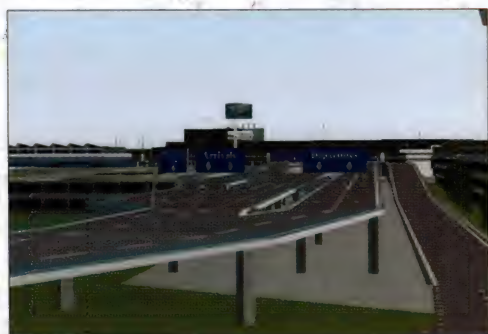
Installation is done through an executable file. The whole scenery uses 29 MB of disk space. Amsterdam 2000 does not include any aircraft and all situations use the default FS 2000 planes.

It includes 32 charts in PDF format: three STARS (Standard Terminal Arrival Route), four SIDs (Standard Instrument Departure), 16 instrument approaches and one Radar approach. It also includes other charts showing departure routes, the main airport layout and gate assignments for Lago's FSTraffic. At the time of this review, the Arrival Taxi chart is missing from the documentation.

the air or on approach. Schipol is quite a sight at night with all the illuminated buildings, which are also greatly detailed. If you look inside the control tower, you'll see its equipment. There are many gates with jetways, and since aircraft are in constant movement

Aerial view of Amsterdam Schipol Airport (top left); the terminal buildings in Amsterdam 2000 are very accurately rendered (center); the night light effects are also very well done (lower right).





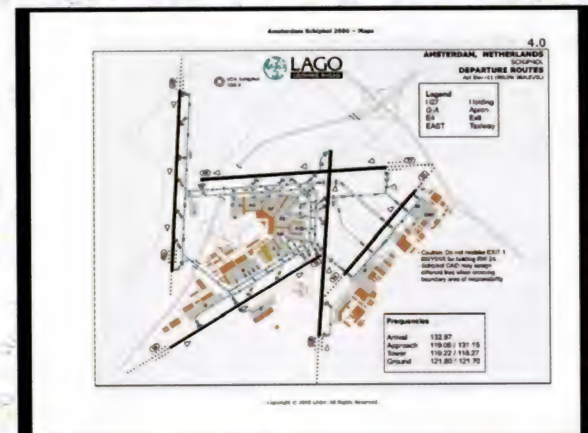
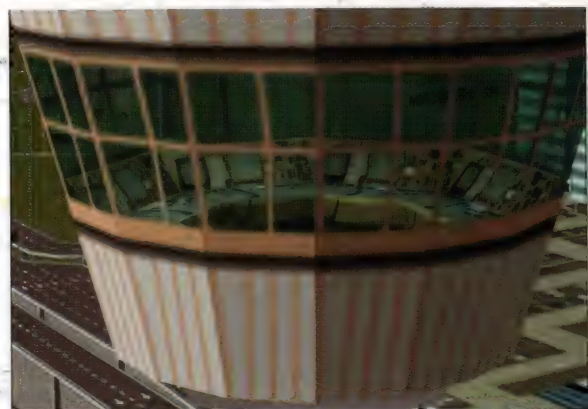
Even the roads and infrastructure around Amsterdam Schiphol Airport are completed in high detail.

Frame Rates

Regardless of what is said in the documentation, it's a known fact that when you cram thousands of objects into a small area, the frame rate will drop significantly. Amsterdam 2000 is no exception. A major issue with Amsterdam 2000 is indeed frame rates, particularly if you do not have a "muscle" system configuration. I averaged 1 - 12.5 fps on my PIII 400 MHz system, depending on location and scenery density display settings.

Flight simmers have been demanding all the bells and whistles with lots of eye candy. Now to enjoy the new generation of scenery and aircraft add-ons, they must possess the necessary hardware. Publishers don't need to hide that you need a powerful setup or to apologize for low frame rate. Either you have the required setup and can enjoy scenery and aircraft add-ons or you don't and must upgrade your hardware to take advantage of it.

If frame rate is a major issue on your system, you can elect to show or hide static aircraft by changing scenery density settings. Aircraft parked at gates will be seen in Sparse mode. More aircraft can be seen at the gates in Normal density and in freight and maintenance areas as well at the Dense setting. I had no problems whatsoever moving about the airport ground, taking off and landing with a P400 and with scenery density set to Dense.



Conclusion

Amsterdam 2000 is an add-on I do recommend. The abundant 3D artwork, dynamics and the feeling that you are indeed at a busy airport makes this scenery very enjoyable.

File Box

Publisher: Lago SNC
P.O. BOX 293, Via Garibaldi 30
22100 Como (CO) Italy
Internet: www.lagoonline.com
Suggested retail price: \$29.99

You'll find great attention to detail in the 3-D objects, such as the interior of the control tower (top); Amsterdam 2000 includes very professional charts and approach/departure plates (middle); jetways and docking systems are part of the terminal structure in Amsterdam 2000 (bottom).



X-36 Digital Joystick And Throttle

It seems like only yesterday when Saitek burst onto the scene with the original X-36 stick and throttle gear combo. It's hard to comprehend that it debuted over two years ago, but it did. The original X-36 stick and throttle combo was a ground breaking product, because in the box you got a stick with rudder control, a stand alone left-handed throttle and a programmable functionality, all for a little over \$100.

The surprising part is that Saitek has primarily been known for being an electronic chess game manufacturer. Before the X-36, there was not even one manufacturer of high-end PC gaming peripherals in the U.S. The X-36 without question put Saitek on the map.

One of the keenest things about the X-36 was its design. Unlike other flight controllers, the X-36 had a look and feel all its own. The stick looked like something you might find in the cockpit of an X-Wing Fighter, with a throttle that matched. They took a big chance by designing the X-36 this way because at the time all the competition's gear had the "ripped right of the cockpit," authentic military look and feel to it. However, the original X-36 had a few problems, as the programmable functionality would do strange things. With the issues it had aside, the X-36 was truly a great stick and throttle combo, and is still used today by many simulation enthusiasts.

Installation

We're now breaking into the new millennium, and Saitek has slightly redesigned the X-36 by bringing it into the digital and USB age. At a glance, the

Gaming peripherals from Saitek

By Rod White

X-36 combo looks like the original. However, the mess of cables required to connect the original X-36 to your PC is now gone. A single gameport, or USB port now simplifies the installation process. However, this is where the first problem occurs if you're running

Although USB is the way to go, I did not have much of a choice but to use this gear as a digital gameport device by hooking up to my SoundBlaster Live! Gameport. After reading on you will realize that this wasn't a bad thing at all. The ability to hook the gear up with a single USB or gameport connector is a blessing, because the original X-36 required keyboard and mouse input connections to be made, which left



The X-36 Joystick/Throttle combo

many wires to hide somehow behind your PC or under your PC desk. It's safe to say that installation is very simple, as it requires installing the software, and even prompts you when to connect the gear under a USB installation. It couldn't be much easier.

The New X-36

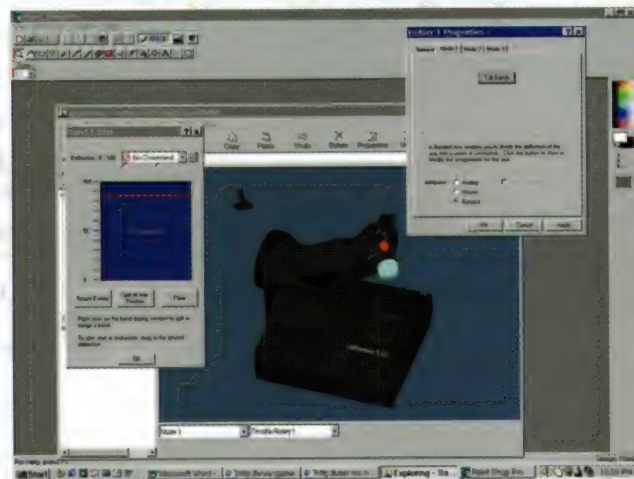
The gear itself features 25 functions to use or program. This also means that you now have 25 direct input functions to assign commands to titles like F/A-18 and USAF, from within the game's own command remapping interface without having to touch the Saitek Gaming Extensions program.

The X-36 features include:

- ➔ Two hat switches on the stick, which can be setup as four-way or eight-way switches.
- ➔ Three push buttons
- ➔ A pinky lever-button with a flip-up safety-button.



The X-36 Programming Interface



- Two rotary dials on the throttle, which can be setup to execute keystrokes, or to be used as two extra axes.
- Two push buttons.
- A mouse-head-like cursor control (which can also be programmed to execute key commands as a four-way hat)
- A three-way switch
- A two-way switch.
- A four-way switch.
- A spring-loaded rocker switch that acts as rudder control (which can also be programmed to do other things as well).

On the bottom of the throttle, you can adjust the movement tension so you can tighten it if it feels too loose. The throttle moves on an arc, very much like an actual jet-fighter throttle quadrant would. What's more, the throttle features stops for off, idle, full military and afterburner positions.

The single three-way switch on the throttle also acts as a switch to change the programmable functionality of the gear. So let's say you wanted the gear programmed to execute a specific set of key commands for Air-2-Air under Mode 1, Air-2-Ground under Mode 2 and Landing under Mode 3, you could accomplish this by simply setting the X-36 up that way with the powerful programming software provided.

The X-36 Digital/USB combo also gives you a way to use the mouse cursor control provided on the throttle to maneuver around the cockpit, and click dials, switches and levers. Simulators like *Jane's F/A-18*, and *Falcon 4.0*, both feature cockpit functions that can be manipulated using the mouse. Therefore, the mouse control does a good job of keeping your hands on the throttle and stick during flight. On the other hand, the cursor control isn't as smooth or precise as my USB mouse, and it takes some getting use to how the way the cursor control nipple moves the cursor around on the screen. Up, down, left and right movement is a little cockeyed due to the position they had to setup the cursor control on the throttle.

As it stands, I do much better in-flight with my USB mouse than I do with the X-36 cursor control, but maybe that will change after more flight time.

The throttle also has a spring-loaded rudder control rocker switch. You had a choice on the original X-36 to use the rocker or stand alone pedals. Unfortunately, Saitek does not offer the use of stand-alone pedals as an option with this updated digital/USB X-36 gear combo and that upsets me. I always prefer pedals to any other means of rudder control. That's not to say that the rocker isn't a great way to control rudder functionality though, as I was very surprised by how well it actually worked. I hate to say it but after spending more time with the gear, I'm not missing my pedals quite as much as I was initially as the rocker is very precise and centers very nicely. I do prefer this rocker device to the twist-action handle rudder functionality that is built into most all-in-one joysticks these days.

Pilot Report

I gave the gear a whirl in titles like *Jane's F/A-18*, *Jane's USAF*, *Gunship!*, *Enemy Engaged: Comanche Vs. Hokum*, *Starlancer* and *Flanker 2.0*. It seems no matter what I threw at it; the X-36 digital/USB managed to perform very well. The stick movement was precise, and has a solid feel, while not overly tough to move. The throttle offered just the right movement to bring me from off, idle, and full military power all the way up to full afterburner without incident.

The Saitek Gaming Extensions software is a very powerful tool, featuring the means to do very simple programming for more advanced stuff that I still don't comprehend. But it's there if needed. The interface is also easy to use, which makes programming the combo simple enough. That is, until you try to program the rotary dials, which I'm sure is a simple task for some, but for me it wasn't simple.

Conclusion

It's hard to knock the X-36 Digital/USB stick and throttle combo. In almost every way this upgraded version of the X-36 surpasses the original. However, the lack of being able to use analog stand-alone rudder pedals with the combo may keep it out of the hands of the serious hardcore flight/combat-simulation enthusiasts. But those who do give it a whirl will find that this new X-36 combo gives you all of the capabilities needed to get the most out of any flight/combat-simulation with stick, throttle and rudder functionality, all bound to your PC via a single USB or gameport connection.

Previous X-36 owners may also want to consider making the upgrade to this new version. It eliminates the need of messy extra wires for making keyboard and mouse connections that the original required. The new programming interface is easier to use, and the issues (sticky keys) that existed with the original X-36 aren't present in this Digital/USB combo. No matter how you look at it, the X-36 Digital/USB is a great way to add stick, throttle and rudder functionality to any simulation enthusiasts PC. In addition, it also works great in general gaming in titles that make use of a joystick.

File Box

Manufacturer: Saitek Industries
2295 Jefferson Street
Torrance CA 90501

Internet: <http://www.saitekusa.com>
(310) 212 5412

Ron Hunt's X-36 USB Help Center:
<http://user.mc.net/~ronht/Index.htm>

Best of all, the Saitek X-36 Digital/USB will only set you back about \$99 if you shop around, which is a steal for just a quality stick and stand alone throttle. Especially one with rudder functionality and powerful programmable functionality that's easy to use included as part of the deal.

I should also add that if you do get the new X-36 Digital/USB combo, you should be sure to check out the X-36 USB Help Center on the Internet. This is an outstanding site that's run by Ron Hunt, an X-36 USB owner who has taken the time to create many step-by-step tutorials on how to get the most out of the X-36 Digital/USB.

CH Products USB Pro Pedals and Yoke LE

I've been excited to try the new digital design USB (Universal Serial Bus) versions of CH Products' Pro Pedals and Yoke LE. I've particularly wanted to change from a joystick to a yoke because I've started real flight lessons in a Cessna 172, which of course has a yoke. What doesn't? One flight school I visited offers lessons in the new Diamond Katana, which in its cozy (read "cramped" semi-reclining, 2-seat cockpit) offers a short joystick, nestled between your thighs. However, I decided to go mainstream and learn to fly in a more customary yoke-controlled aircraft. The rental cost is less, too.

So, what's the big deal about USB? First, it's "hot plug and play," which means you can install USB devices with your computer running. Second, it's newer technology than the gameport connection and offers more hardware alternatives. The Pro Pedals have three axes of control and the USB yoke LE has three more axes. The full USB version of the yoke, to be released later this year, will have five axes of control. With six axes, I gain a lot, including

Reviewed by Doug Horton

proportional toe brakes on the USB Pro Pedals when they're used with FLY!, and on-off toe brakes with FS 2000, using a workaround I will describe later.

Installation

Installation was utterly simple and worked as described in the short written instructions. My Windows 98 SE "saw" the yoke and pedals after I attached each to the USB ports, then in turn, I pointed the Add New Hardware function to the provided driver disks.

No re-booting was necessary, and I was pleasantly surprised to learn that I didn't need to calibrate either the yoke or the pedals. They worked together flawlessly, and they operated familiar functions in FS 2000 "out of the box."



Features

Specifically, the left-hand rocker switch, which is positioned fore and aft on the left yoke handle, operated electric trim. The gear and flaps switches operated correctly, and the throttle worked. The right-hand rocker switch operates rudder trim, and the two buttons operate the S-key view sequencing and kneeboard functions. Best of all, the hat switch toggles the eight exterior view functions of FS 2000. Any of the buttons and switches can be reprogrammed by the provided Gaming Center software, or through your simulator's controls interface.

In addition to elevator and aileron control with the USB LE yoke, it provides the following controls:

- Throttle
- Hat switch
- Two rocker switches
- Gear switch
- Flaps switch
- Three buttons

The full (non-LE) USB yoke will add mixture and prop control as well as one more button.

While the USB ProPedals toe brakes work in FLY!, they don't work as default functions in FS 2000. The toe brake functions of the pedals are proportional controls, using two analog axes. In FS 2000, the left and right braking functions are F11 and F12 digital key press functions. However, recognizing the desire of FS 2000 to use the new USB Pro Pedals for toe brakes, CH Products has provided set up instructions on their website link (<http://www.chproducts.com/fom/cache/216.html>). By the way, in the default setup, pushing the pedal toe brakes while running FS 2000 will likely cause aileron and elevator motion, so users need to be aware of this, and instructions are provided for reprogramming at this same link.

Likes and dislikes

What's to like? I was thrilled to not go through the hassles I've previously experienced in setting up gameport accessories and I was relieved to not have to calibrate the new yoke and pedals. Since I won't have the yoke permanently positioned in front of my monitor, it will be great to detach and re-attach as desired, with instant recognition provided by the USB function. The overall feel of the yoke is good, and having toe brakes is something that adds significant realism to ground operations. The overall feel and function are much



better than the older CH yoke. As described by CH Products, the new yokes are "responsive, durable, ergonomic, and programmable."

What's not to like? Not much, but I'd like the gear and flaps switches to have different shapes and be farther apart on the yoke. I'm also not sure whether the hat switch furnished with the LE yoke is 4-way or 8-way. It seems to be both. In the Windows Game Controllers Test dialog, it appears to be 8-way, and it works that way for FS 2000. Strangely, it seems to be 4-way when used with

FLY!

There is also a slightly annoying sticking function of the yoke's pitch (elevator) motion. The spring tension, by design, is weak in the center of motion, as it should be. However, it seems to stick just a little. It sticks just enough so that it's very difficult to determine the true neutral position, which is further influenced by use of the rocker switch trim function. Said another way, it's difficult to trim for straight and level flight, compared to the way you would in a real airplane to relieve yoke pitch-axis pressure.

My biggest problem isn't a CH Products issue, but a Windows issue as USB and gameport facilities don't always coexist well. I'm told that some CH gameport products can be used with CH Products' USB accessories, but I didn't try it. So, I reluctantly disconnected my gameport CH Throttle and F-16 Fighterstick, in addition to my gameport Pro Pedals (not needing two sets of pedals). I had a few functions programmed on my throttle and joystick, but I mostly used the hat switch, which I have with new yoke.

Some users will have an issue with the number of USB ports on their computer. I have two, one of which was already used, so I purchased a 4-port USB hub for about \$30.

As it has been a continuing issue for flight simmers, some users may question the spring tensioning of the yoke and pedals fore and aft motions, but I don't think there's a "right answer" to this issue. When you're on the ground in a real aircraft, there is little resistance to yoke or pedals motion, and the resistance increases as you fly, due to "weathervane effects" on the elevator and rudder. Also, the elevator center point in a real aircraft change with trim, and CH provides a centering wheel on the yoke front housing for calibrating the center point. CH Products has achieved a logical compromise in their design.

File Box

Manufacturer: CH Products

970 Park Center Drive
Vista, CA 92083

Internet: www.chproducts.com

Suggested retail price: Yoke \$109.95 Pedals \$109.95

AFCS-II Flight Yoke and Throttle

I have to admit to having a love-hate relationship with flight yoke controls for PC flight simulation. I *love* using them for general aviation flying and I *hate* that there is such a small selection from which to choose. It seems that, for the most part, the manufacturers of PC peripheral controls do not see enough potential market for control devices oriented toward general aviation in flight simulation. A plethora of combat joysticks and throttles are available on the retail shelves, along with, of course, the ubiquitous racing wheel and accelerator/brake pedals. However, it's slimpickins when it comes to yoke-style controls for general and commercial aviation.



CHProducts has offered a yoke control for the last several years. Although you will not find it on the retail shelves for the most part, you can at least order it over the Internet. The only other options have been the rather expensive control systems offered by manufacturers of peripheral devices for FAA approved IFR simulators, like the Elite program. And it's only recently that PC hardware has adopted the USB (Universal Serial Bus) port, making it possible to connect most of these devices.

The Virtual Pilot Pro and Flightsim Yoke from CH Products have served me well over the years, and I really do not have any serious complaints with them. However, they're manufactured with the objective of hitting the retail PC peripheral price range. Therefore, they're constructed of plastic and are lightweight. They do work just fine, and as I mentioned, I am happy with them. But they still do not have the "feel" of real aircraft controls. There is simply no way to manufacture a truly realistic yoke; to sell for under \$100. So, the choice has always been between a \$100 plastic yoke or a \$2000 "real-world" control device, with nothing in between.

AETI has recognized this "hole in the market," and contracted with Precision Flight Controls, a manufacturer of the "real world" stuff, to produce the AFCS Advanced Yoke

Reviewed by Tim Dickens

and Throttle. A higher quality general/commercial aviation yoke-style control, manufactured with the same type of components found in the much more expensive systems. A sort of compromise between too little and too much, at a price range that many PC flight simulation enthusiasts can afford.

Construction Materials

As I had mentioned, the only real "problem" with the PC peripheral priced yokes is the "feel" of the controls. Although they function just fine, and in my opinion are more realistic than a standard joystick for use in general/commercial flight simulation, they do not exhibit the solid, heavy feeling you experience when flying a real aircraft. There is just no way they could do so when constructed with plastic.

The AETI AFCS II is constructed with steel or aluminum for both the base and control shaft. The yoke "wheel" is made with molded aluminum, in the exact shape of the yoke found on the SAAB 340-commuter airliner. The moving components use an all-metal progressive spring-tension design, just like the more expensive devices. The weight of the individual components, combined with the all-metal design and progressive tension, give this device a very real-world feel.

Virtual pilots who want to enhance the realism of their flights will appreciate these qualities. Like a real-world aircraft, the movement of the controls is linear with respect to device input vs. aircraft motion. Also, the finicky sort of "sticking" of the control shaft, and resulting erratic aircraft elevator performance found in the plastic yokes is eliminated. This has been my number 1 "gripe" with the plastic yoke. Ever set yourself up on final and find it difficult to maintain the proper pitch when approaching the runway threshold when using a plastic yoke? This simply does not happen with the AFCS II yoke. This yoke exhibits very smooth operation in every control movement axis.

Installation

One of the best features of the AFCS Yoke and Throttle is that installation does not require a degree in computer science or engineering. It connects to your game port in exactly the same way as your present yoke or joystick. If you presently use rudder pedals, the connection using a "Y" cable is still accomplished the same way. Its interconnecting cables are a higher quality compared to those that are included with

typical PC peripherals. This reflects the general upgrade in quality of the product. The AFCS II yoke does *not* support USB connection at this time.

The shipping container also includes a diskette containing the drivers for the yoke and throttle. Here's another aspect of the AFCS yoke that exhibits a well planned design principle. The drivers are compatible with those of the CH Products CH-Pro joystick and yoke. So, you'll like this for easy installation and Windows 95/98 will love it—particularly if you already have a set of rudder pedals installed. When I inaugurated the AFCS yoke to my system, I fully expected Windows 98 to display its usual animosity toward the new device. This did not happen. Installation was as smooth as transmission fluid on a linoleum floor. The only thing you will need to watch for is that since these drivers are licensed from CH Products, your new yoke will show up in your Windows *Game Controllers* menu as a F-16 Combat Stick.

Setting up for flight

The heavy metal base of the AFCS II yoke comes with an attached mounting bracket. This bracket has two large thumbscrews underneath. In order to get the yoke setup for flight it must be attached to whatever table, desk or structure you use as your "virtual cockpit." Although the entire yoke portion of the device weights over 10 pounds, it is easy enough to move around, or detach again. The throttle component is attached in the same fashion. These mounting brackets will accommodate a larger variety of tabletops than most other devices, which makes setup very flexible.

If your PC desktop situation is like mine, you really do not have a place where you can leave such a device permanently installed. Perhaps this is the only aspect where the smaller and lighter plastic yoke has an advantage. A small, lightweight device is easy to simply remove and store on top of your monitor, or any other convenient location. This is not so easy to do with two larger and heavier components like this. So if space and storage is a major consideration in your setup, this is something you will have to consider before making a purchasing decision. It is an inherent drawback for any higher quality, and therefore, larger and heavier peripheral device, and not a negative particular to the AFCS yoke and throttle.

Flying with the AFCS Yoke and Throttle

As I already stated, there is simply no comparison with the general quality and realistic feel between this system and the "standard" PC peripherals. What you gain is an unparalleled level of realism and fluidity of motion. Controlling the aircraft is not only more realistic, but actually much easier. This is not only true during landing and takeoff,

where elevator control sensitivity and *controllability* is particularly important, but also when making typical maneuvers like standard rate turns or any other scenario where the relationship between control device and aircraft must be consistent.

However, what you lose are some of the typical features of the gameport devices to which you may be accustomed. For example, the device does not have a hat-switch. It does come with four rocker-switches and four push-button switches. However, if you've become use to the functions of a hat-switch, and have these functions programmed, you will have to make some changes. Also, if you are a force-feedback enthusiast, the AFCS yoke is *not* a force-feedback device. Of course, this is true for any other yoke-style device, and most joysticks on the market.



Conclusion

Considering all things, the AETI AFCS Yoke and Throttle has many more advantages than it does drawbacks. The quality of the construction, and realistic feel and performance of this device is far superior to anything in the "standard" PC peripheral market. It is much more like the professional quality devices, which typically sell for a much higher price.

If you think you have enough flexibility in your physical PC desktop situation to mount and/or store the device, and you are a general/commercial aviation flight sim enthusiast who wants more authenticity in your virtual flights, the AETI AFCS Yoke and Throttle is something to consider.

File Box

Manufacturer: AETI

Internet: www.simpilot.com

Suggested retail price: \$495.00

Talk The Talk

Aviation uses so many specialized terms that it's easy for nonpilots to get lost in the lingo. Here is a list of the most common aviation acronyms you may see in Flight Simulator World and other aviation related materials.

ADF

Acronym for Automatic Direction Finder. A radio compass which gives a relative bearing to a non-directional radio beacon

ATC

Acronym for Air Traffic Control

ATIS

Acronym for Automatic Terminal Information service. A continuous recorded broadcast of routine non-control airport information, usually at large airports.

AWOS

Acronym for Automated Weather Observing System

CDI

Acronym for Course Deviation Indicator. The vertical needle of a VOR indicator which shows the aircraft's position relative to the selected VOR radial.

Clean Stall

Minimum speed at which the airframe produces lift, with flaps extended

DH

Acronym for Decision Height-altitude above ground, below which you *must* land

DME

Acronym for Distance Measuring Equipment. The onboard equipment in the aircraft reads a continuous gradient range distance-from-station readout by measuring time-lapse of a signal transmitted by the aircraft

EFIS

Acronym for Electronic Flight Instrument System. A function CRT displays replace traditional instruments for providing flight navigation and aircraft systems information.

FAF

Acronym for Final Approach Fix

FBO

Acronym for Fixed Base Operator. Commercial operator supplying fuel, maintenance, aircraft sales, rental, flight training, and other General Aviation services at an airport.

FIR

Acronym for Flight Information Region.

FL 220

Flight Level 220 = 22,000 feet above sea level.

FMC

Acronym for Flight Management Computer

Glideslope

The vertical guidance part of an instrument landing system which establishes a safe glidepath to a runway.

GPS

Acronym for Global Positioning System

HSI

Acronym for Horizontal Situation Indicator

IAF

Acronym for Initial Approach Fix

IAP

Acronym for Instrument Approach Plate

ICAO

Acronym for International Civil Aviation Organization.

IFR

Acronym for Instrument Flight Rules. Generally when visibility is less than three miles, and when flying at altitudes above 18,000 feet. Pilots without instrument rating (certification) and the proper onboard equipment are restricted from operating the aircraft under these conditions.

ILS

Acronym for Instrument Landing System A navigation aid that uses radio beacons for vertical and horizontal guidance during approach. The localizer provides lateral guidance, while the glide-slope defines the correct descent.

IMC

Acronym for Instrument Meteorological Conditions. Weather below VMC conditions (see VMC below)

Inner Marker (IM)

A waypoint situated directly in front of the runway intersection defined by intersecting radials from either navigational beacons or established airways.

MAP

Missed Approach Point

Marker Beacons

75 MHz beacons used as part of an Instrument Landing System. These beacons transmit vertical signals, defining points along the glideslope:

Talk The Talk

MDA

Minimum Decent Altitude

METAR

A coded aerodrome Meteorological report.

Middle Marker (MM)

Situated at a point at or near Decision Height

Morse code idents

Morse code identifiers transmitted by NDB and VOR nav aids, used for Identification purposes. The Morse identifier is typically printed on aeronautical charts.

MSA

Acronym for Minimum Safe Altitude

MSL

Acronym for Mean Sea Level

NDB

Acronym for Non-Directional Beacon. A navigational aid that transmits a non-directional signal, superimposed with a Morse code identifier. This signal is received with the ADF radio.

OBS

Acronym for OmniBearing Selector

Outer Marker (OM)

Situated at or near the glideslope intercept point

Procedure turn

Maneuver that reverses the direction of an aircraft during an Instrument Approach Procedure, to enable it to intercept the final approach course.

QFE

Height above the airfield

QNH

Altitude above sea level

Rate 1 turn

Aircraft turn of 3 degrees per second

RMI

Acronym for Radio Magnetic Indicator

RVR

Acronym for Runway Visual Range

SID

Acronym for Standard Instrument Departure

Stall

Minimum speed at which the airframe produces lift, with flaps retracted

Standard rate turn

A 2-minute turn, as indicated on your Turn Coordinator gauge.

STAR

Standard Terminal Arrival Route for IFR arrivals

TAS

True Airspeed. Rectified airspeed corrected for altitude and outside air temperature.

TCA

Terminal Control Area (USA).

Unicom

Privately operated radio advisory service at uncontrolled airfields

VFR

Acronym for Visual Flight Rules. Prescribed for the operation of aircraft in visual meteorological conditions. (VMC). VMC is generally defined as five miles visibility or more and 1,000 feet vertical and one nautical mile horizontal clearance from cloud, but variations apply to aircraft operating below 3,000 feet above sea level.

VMC

Acronym for Visual Meteorological Conditions. Generally defined as three miles visibility or more, 1,000 feet vertical, and one nautical mile horizontal clearance from clouds. Variations apply to aircraft operating below 3,000 feet above sea level.

VOR

Acronym for Very high frequency Omni-directional Range. A VOR ground station transmits a two-phase directional signal through 360°. The aircraft's VOR receiver enables a pilot to identify his radial or bearing from/to the ground station.

VSO

Stall speed in landing configuration

V-speeds

Designations for certain velocities relating to aircraft operation:

V1 - decision speed, up to which it should be possible to abort a take-off and stop safely within the remaining runway length. After reaching V1 the take-off must be continued.

Va - design maneuvering speed. The speed below which abrupt and extreme control movements are possible (though not advised) without exceeding the airframe's limiting load factors.

Vfe - maximum flap extension speed (top of white arc on ASI).

Vmca - minimum control speed (air). The minimum speed at which control of a twin-engined aircraft can be maintained after failure of one engine.

Vne - never-exceed speed, "redline speed" denoted by a red radial on an ASI.

Vmo - maximum operating speed. Also Mmo, Mach limit maximum operating speed. Vno - normal operating speed. The maximum structural cruising speed allowable for normal operating conditions (top of green arc on ASI).

Vr - rotation speed, at which to raise the nose for take-off. Vso - stalling speed at MTWA, in landing configuration with flaps and landing gear down, at sea level.

Vx - best angle of climb speed on all engines.

Vxse - best engine-out angle of climb speed.

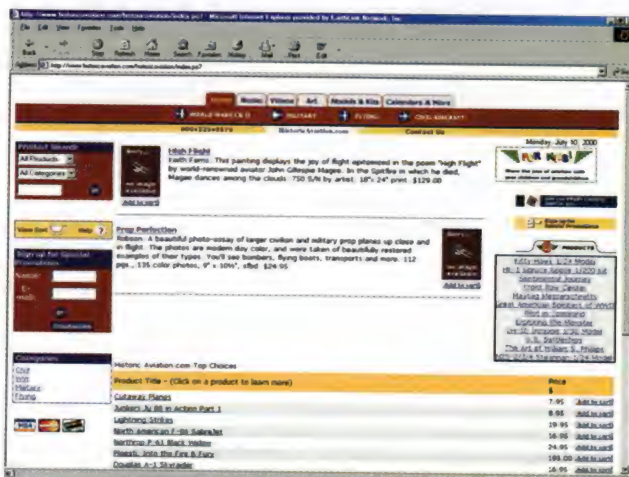
Vy - best rate of climb speed on all engines.

Vyse - best engine-out rate of climb speed, "blue line speed" (blue radial on ASIs of light twins)

Web Watch

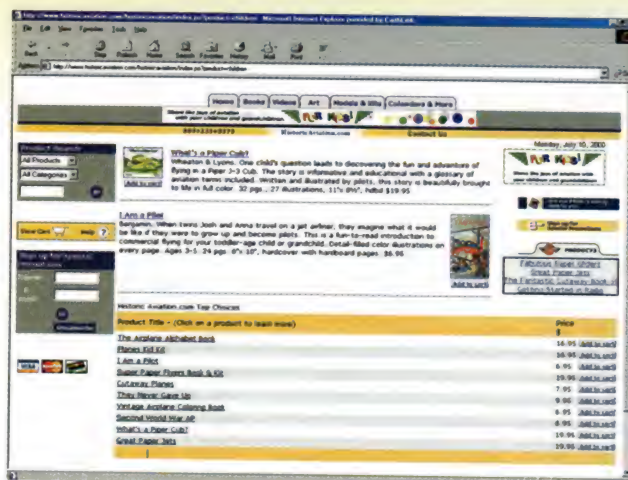
Welcome aboard *Flight Simulator World's* Internet flight 101. Today's journey will take you to exotic places where you can research aviation history, FS 2000 and Terminal Reality's FLY!. Please focus your attention on the stewardess....er, I mean your browser (I get carried away sometimes) and let's go for a history lesson.

Type <http://www.historicaviation.com> in your browser. HistoricAviation is a great site for the aviation buff. You'll find an assortment of aviation-related products broken down into Civil, Military, WWII and Flying categories.



Within these categories, you can look up books, videos and artwork all available for purchase through their on-line store. For those of you with children or grandchildren, check out the kid's section. You'll find a selection of books and such geared toward the 'pre-pilot' or young pilot "wannabes."

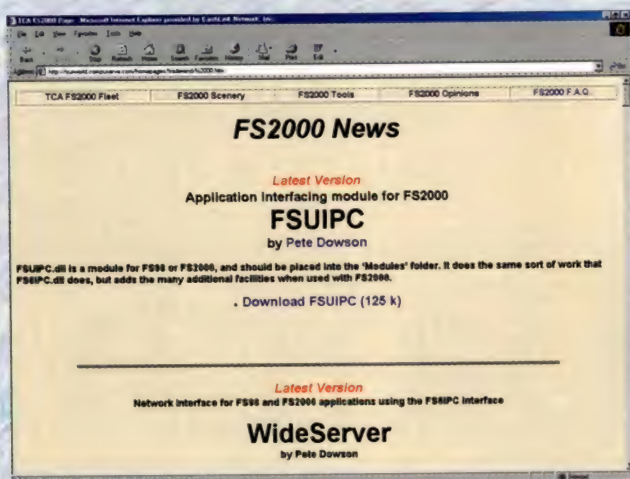
Adam Howe



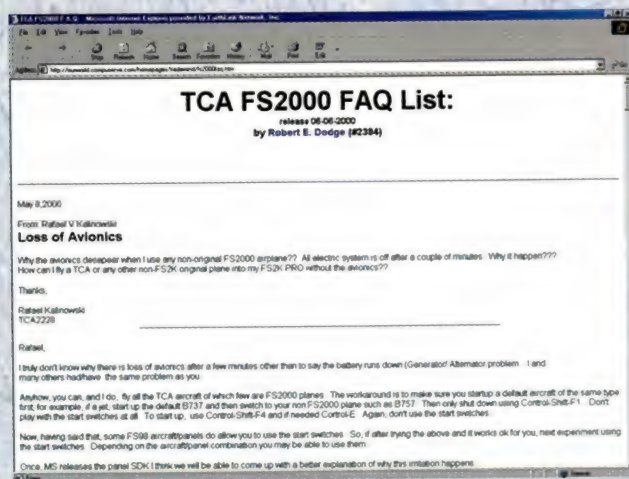
I may not be the thriftiest shopper, but the prices appear reasonable to me. If you're looking for anything related to aviation history, HistoricAviation.com is the place to visit.

Get ready to bookmark because flight 101's next stop brings us to <http://ourworld.compuserve.com/homepages/tradewind/fs2000.htm>. I was impressed by this site and was surprised I had not come across it before.

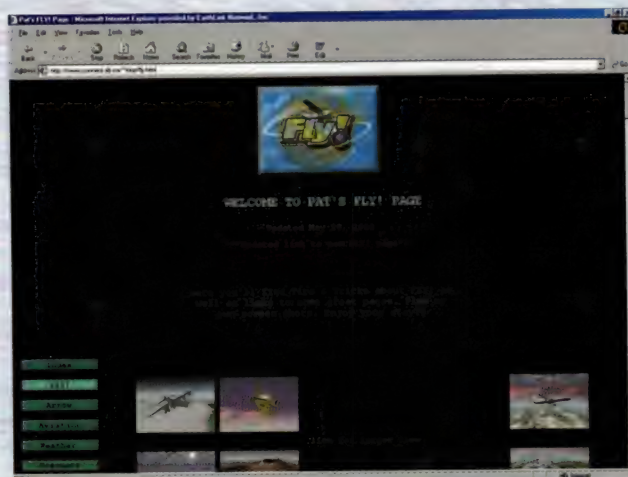
Internet Sites for Simmers



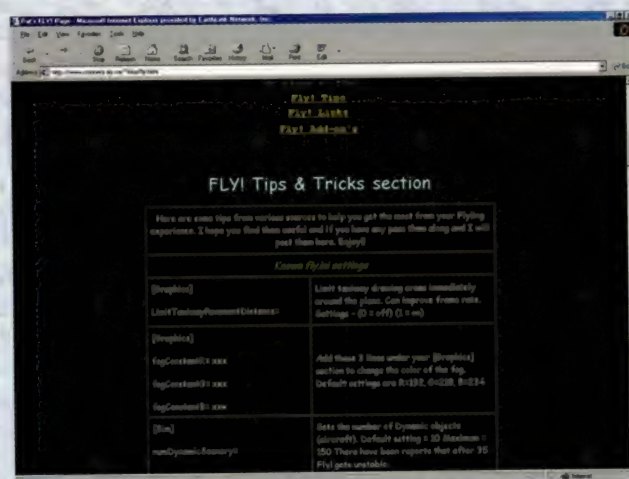
This page offers great information on FS 2000 in the FAQ section and not just the basic "How do I change planes in FS" type of questions. Some of the FAQs are related to specific programs/panels/planes offered by the website, but there is a lot of information that will be very helpful (like how to add a GPS and GPS NAV switch to a generic panel). This site also offers downloads for aircraft, scenery and utilities. The aircraft downloads mainly include larger aircraft and a few repaints. The utilities downloads are more uncommon ones – ones that you do not easily find elsewhere. Tools for edit flight dynamics and extended bitmaps, viewing textures, and compressing BGL files.



Flight 101's next layover brings us to the world of FLY!. Set your browser to: <http://www.connect.ab.ca/~kluz/fly.html>. This portion of the site offers a few fancy screen shots of FLY!, but more importantly are the Tips and Tricks.



The Tips and tricks have two sections – known settings in FLY!'s *.INI (programs initialization file) and general notes flying and managing the program. At the end of the tips and tricks you'll find a FLY! Links section followed by a small download section that includes utilities, aircraft and scenery.

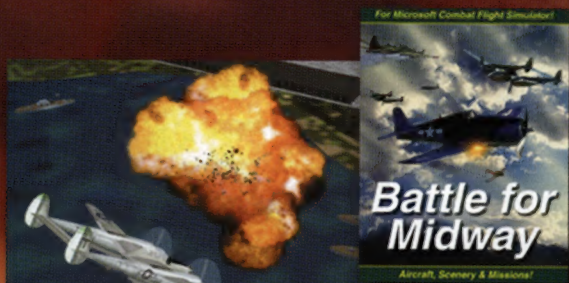


Click the Aviation button on this page to get a great list of aviation links. If you own FLY!, check out this site and visit it often to get the most out of FLY!.

As we prepare to descend, please fasten your seatbelts....there I go again.... Please direct your browser to <http://www.unofficialfly.com>. Here you hit the link to the unofficial FLY! website.

Join The Fight!

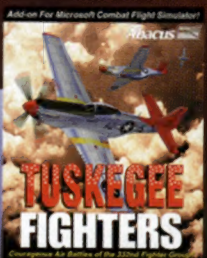
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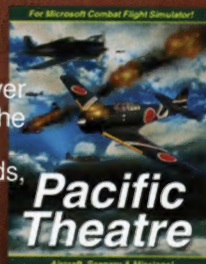


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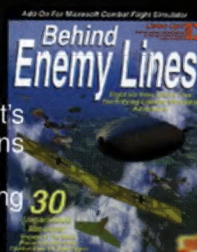


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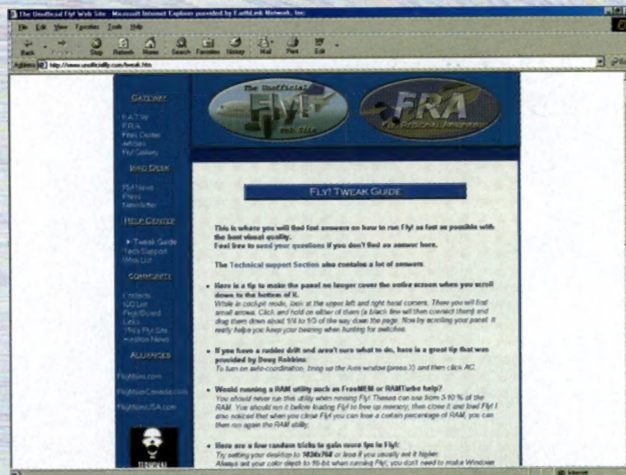
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Web Watch



This site is, as it states, the unofficial FLY website offering information in the form of news, a feedback form, links, a flightboard, a tweak guide and tech support. To stay on top of the latest information, this page needs to be in your Favorites (or Bookmarks). Check out the Files Center for all kinds of accessories to Fly including aircraft, replacement and new scenery, scenarios, flights and even a voice pack.



I hope you have enjoyed flight 101 of the Internet. If you have any suggestions for a website to be reviewed in WebWatch, whether it's your site or someone else's, let me know at adam@ftmagazine.com.

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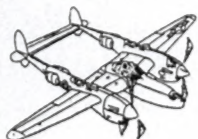
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HEY, I'M TALKING TO YOU!

It's about time you started talking back.



"Landing lights on"

"Gear down"

"Flaps down"

"Tower, GC117 with you for 27"

"GC117, cleared to land runway 27"

"GC117 is cleared to land"

"Excellent voice recognition"
- CNET Gamecenter

"A must have for flight sims"
- ZDNET GameSpot

"A real winner"
- Flightsim.com

"Works extremely well"
- AVSIM

"Revolutionary"
- CombatSim

"Amazing to use"
- Computer Gaming World

Doing the keyboard shuffle

The keyboard is fine for updating your flight-log but not for serious simulation. For realism, you have your stick or flight yoke, rudder pedals, throttle quadrant, and maybe even a full radio stack. Now, you can complete the simulation with Game Commander™ voice control and free yourself from all those keyboard commands.

Control your aircraft

Stop struggling to remember a plethora of keystrokes for operating your aircraft. Just say what you want to do. Flaps up." "De-icer on." "Switch to left fuel tank." It's like having a co-pilot at your beck and call. Especially helpful if you're trying to manage a 747-400 all by yourself.

Interact with air traffic control

Instead of navigating through countless menus to interact with air traffic control, simply talk to them like a real pilot. "Request field advisory." "Ready for takeoff." "Mayday, mayday, mayday!" Now you can finally use the radio the way it was meant to be used. With your voice.

Call your wingman

In the heat of battle, make full use of your wingman and flight by barking out orders to them instead of reaching for the keyboard. "Clear my six!" "Engage bandits." "Return to base." And watch as they carry out your orders.

Take command

Game Commander allows you to use any word or phrase to trigger keystrokes. **With no voice training.** And you can program up to 256 keystrokes for each command to carry out a series of actions or navigate even the deepest of nested menu options. Since Game Commander sends keystrokes as if you had typed them, it will work with any simulation, game, or application that accepts keystrokes.

Experience it

If you have a full duplex sound card and a microphone (preferably a noise canceling mic), you can try Game Commander and experience the improved convenience, realism, and immersion it brings to your favorite simulations and games. Download the free trial today at www.gamecommander.com/trial/



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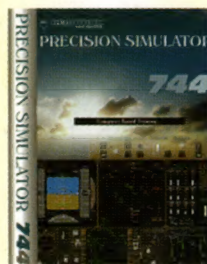
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